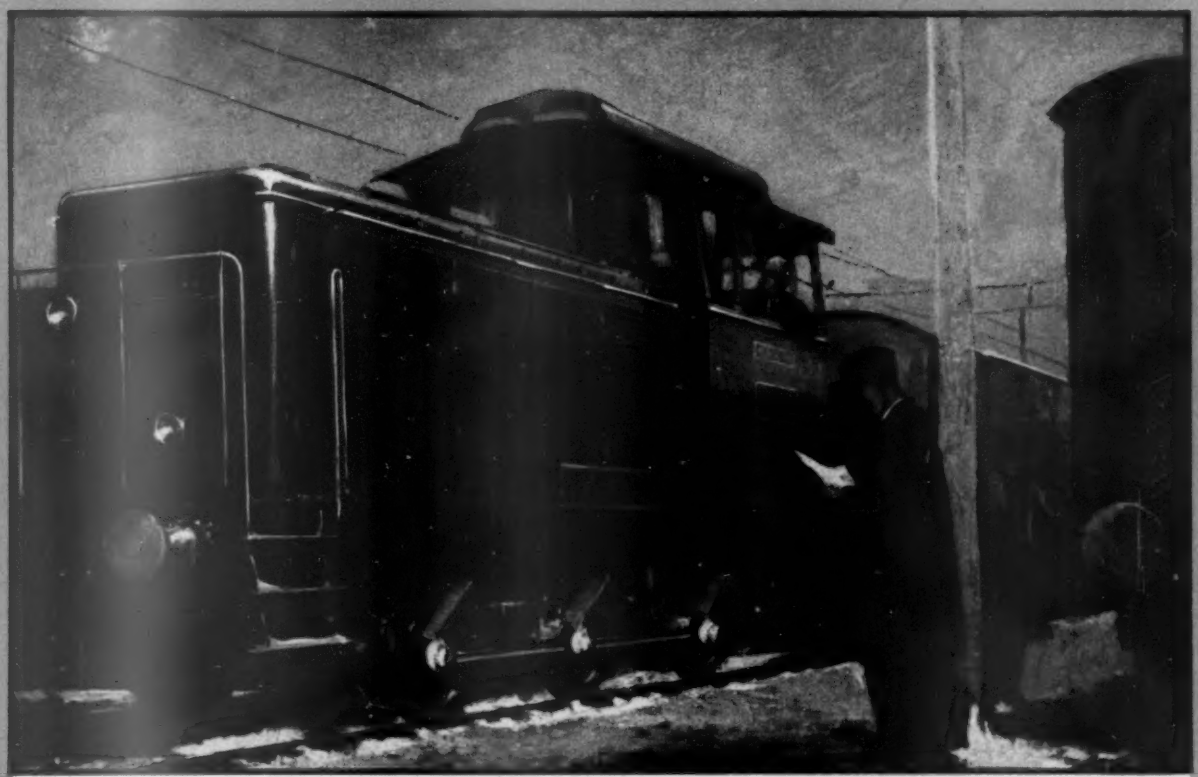
THE
RAILWAY GAZETTE

Price: Two Shillings | FRIDAY, SEPTEMBER 15, 1961 | Annually £5 by post



SWISS DIESEL-ELECTRIC SHUNTING LOCOMOTIVES

The artist's impression shows a Type Em 3/3, one of the new standard Diesel-electric locomotives now in service on the Swiss Federal Railways.

These locomotives are constructed by the Swiss Locomotive and Machine Works, Winterthur, and it is intended that this type of locomotive shall progressively replace most of the remaining steam shunting locomotives on Swiss Federal Railways.

The locomotives are equipped with Timken bearings on all axles.

British Timken, Duston, Northampton, Division of The Timken Roller Bearing Company. Timken bearings manufactured in England, Australia, Brazil, Canada, France and U.S.A.

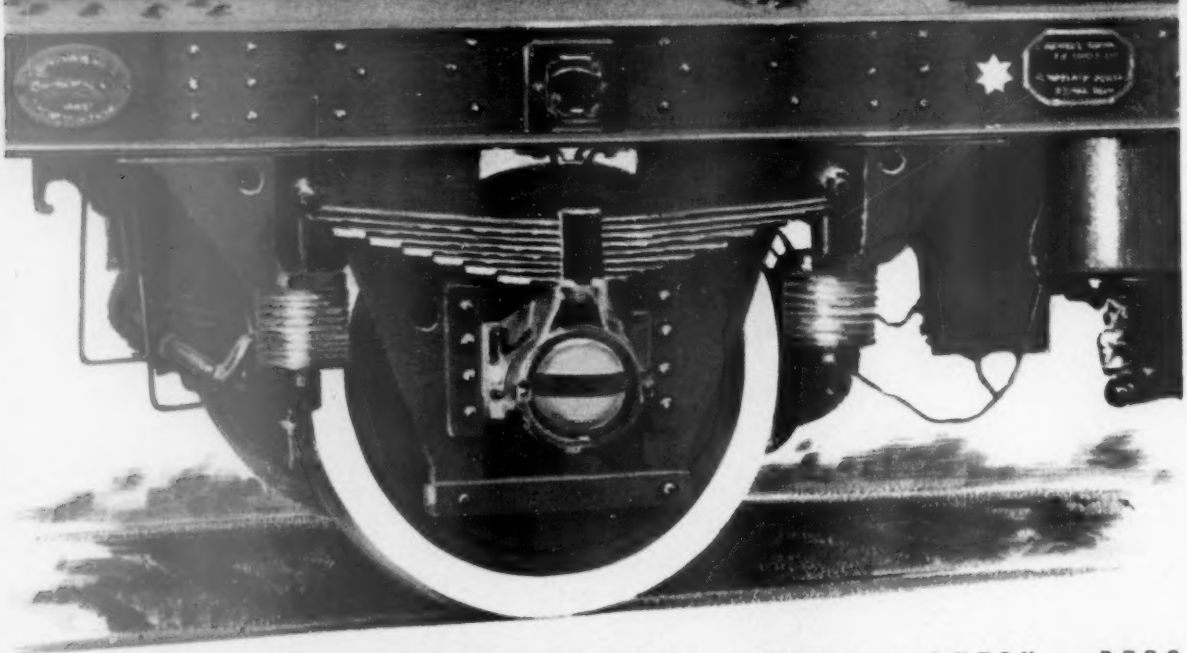
TIMKEN®
REGISTERED TRADE-MARK
tapered roller bearings

Tank wagons built by Charles Roberts & Co. Ltd. and equipped with

SKF

SPHERICAL ROLLER BEARING AXLEBOXES

The **SKF** spherical roller bearing axleboxes with which all these wagons are equipped offer complete reliability, combined with ease of maintenance and high load-carrying capacity.



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OVER 1,825,000 **SKF** ROLLER BEARING AXLEBOXES HAVE NOW BEEN SUPPLIED TO THE RAILWAYS OF THE WORLD

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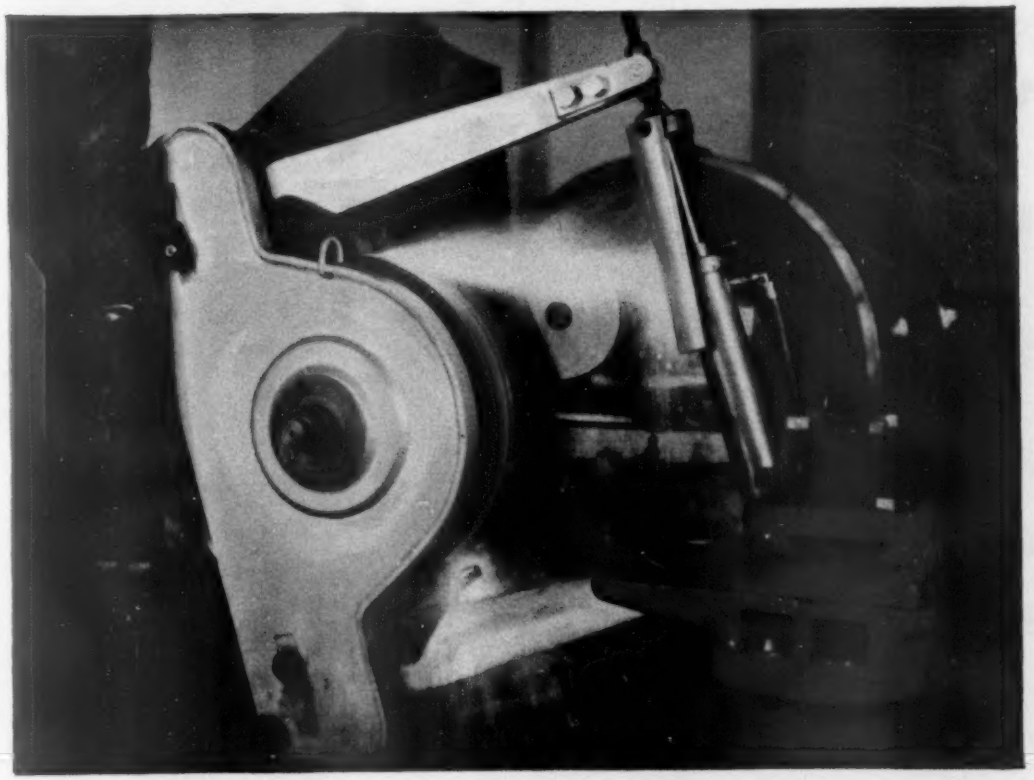
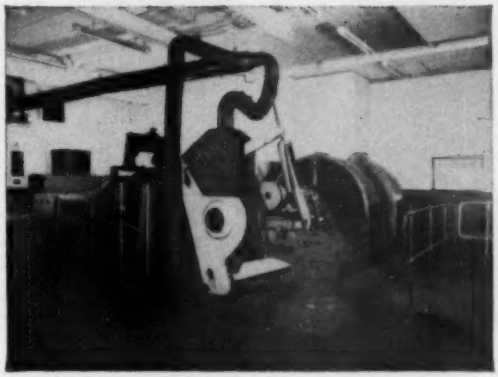
A Branch of The United Steel Companies Limited **P.O. BOX 50, THE ICKLES, ROTHERHAM, ENGLAND**



Under modern operating conditions railway wheels have to withstand high temperatures, heavy loading and high levels of stress. The wheel testing machine illustrated is used to determine the best qualities of steel for wheels which have to withstand these conditions.



The colour picture illustrates a wheel testing machine braking a solid wheel from high speed.

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WESTINGHOUSE

the name with a reputation for BARRIERS

FOR AUTOMATIC, REMOTE OR MANUAL OPERATION

COMPLY WITH LATEST MINISTRY OF TRANSPORT REGULATIONS

The illustrations show five recent installations of Westinghouse Barriers on British Railways:—

- Ware, Eastern Region
- Spath, London Midland Region
- Blackford, Scottish Region
- Marston, London Midland Region

Photo by courtesy of British Railways.

- Teams, North Eastern Region

Photo by courtesy of British Railways.

WESTINGHOUSE BRAKE AND SIGNAL CO. LTD., 82 York Way, King's Cross, London, N.1

Saxby & Farmer (India) Private Ltd., Calcutta. McKenzie & Holland (Australia) Pty., Ltd., Melbourne.
Westinghouse Brake & Signal Co., S.A. (Pty.) Ltd., Johannesburg. *Agents—Bellamy & Lambie, Johannesburg.*

KEEPING THINGS MOVING ON MIDLAND REGION

Already Yorkshire Diesel shunting locomotives are at work on British Railways London Midland Region, taking sharp curves and steep gradients in their powerful stride. These 170 h.p. diesel-hydraulic locomotives are powered by Rolls-Royce engines with torque converter, and their controls are both simple and efficient. Reversing is instantaneous—the driver need not even declutch. Westinghouse vacuum controlled brakes and deadman's equipment are fitted. Cabs are designed with straight sides so that the driver has an all-round view without opening doors and windows—a great advantage in winter. 20 of these locomotives have been ordered and are mainly replacing the old Lancashire and Yorkshire Railway 'Pugs'. Today, when diesel locomotives have a vital place in railway modernisation, YORKSHIRE ENGINE COMPANY are proud of this contribution.

YORKSHIRE ENGINE
COMPANY LIMITED

MEADOW HALL WORKS, SHEFFIELD 9.

Yorkshire Engine 170 *H.P. Diesel Hydraulic Locomotive* 0-4-0 *at British Railways Motive Power Depot, Bootle, Liverpool.*

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There is no limit to the size of the axleboxes we can make. Illustrated are typical examples of the many types supplied for rolling stock and motive power requirements for railways and other industries in all parts of the world.

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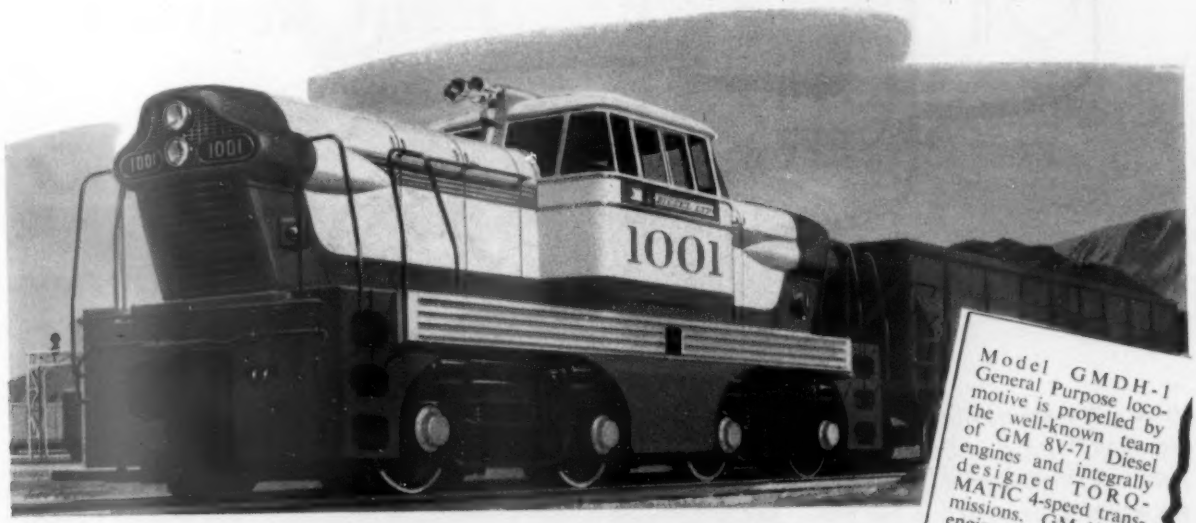
GENERAL MOTORS DIESEL-HYDRAULIC LOCOMOTIVE



Model GMDH-1 General Purpose locomotive is propelled by the well-known team of GM 8V-71 Diesel engines and integrally designed TORQMATIC 4-speed transmissions. GM 12V-71 engines are optional.

Here's a great advance in low-cost motive power for universal application requiring light axle loading and maximum operating economy. It's the GMDH-1—a Diesel-Hydraulic locomotive that has demonstrated outstanding adhesion qualities and reliability.

Rated at 550 gross locomotive horsepower (800 H.P. optional), the GMDH-1 used singly is a highly productive tool for shunting, transfer and light-duty mainline service. It can also be equipped for multiple-unit operation to handle heavier trains.

In service, GMDH-1 locomotives have given better than 95 per cent availability under conditions ranging from sub-zero to tropical climates—and from sea level to 9,000-ft. altitude.

Since all axles are driven through shafts and axle-mounted gear boxes, weight on drivers is 100 per cent—axle loading ranging from as low as 26,000 lbs. (11,800 kg.) per axle on narrow-gauge units to a maximum of 37,500 lbs. (17,000 kg.). Actual tests on dry rail have demonstrated an adhesion of over 30 per cent starting and 26.5 per cent at 5.5 m.p.h. (8.8 k.p.h.). This superior adhesion means more tonnage can be hauled over the controlling grades.

Let your General Motors locomotive representative survey your requirements and show you how the GMDH-1—and other General Motors locomotives—can improve the efficiency of your operations. Your inquiry will receive prompt attention.

GENERAL MOTORS OVERSEAS OPERATIONS

Division of General Motors Corporation, New York 19, N.Y., U.S.A. Cable Address: Autoexport

ASSOCIATE BUILDERS: AUSTRALIA—The Clyde Engineering Co. Pty., Ltd., Sydney, N.S.W. BELGIUM—LaBrugeoise et Nivelles, St. Michel-lez-Bruges • GERMANY—Henschel-Werke, GmbH, Kassel • SOUTH AFRICA—Union Carriage & Wagon Co. (Pty.) Ltd., Nigel, Transvaal SPAIN—Material y Construcciones, S. A., Barcelona • SWEDEN—Nydqvist & Holm Aktiebolag, Trollhattan

LOCOMOTIVE PLANTS: Electro-Motive Division of General Motors, La Grange, Illinois, U.S.A. General Motors Diesel Limited, London, Ontario, Canada

GM DIESEL POWER

GENERAL MOTORS LOCOMOTIVES

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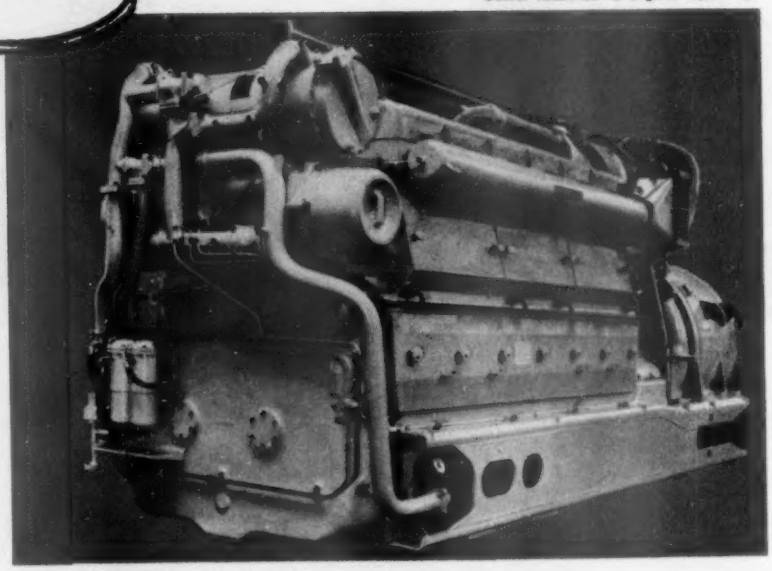
Duralumin pistons make engines light hearted

Sulzer 12LDA28—B engine—2,500 h.p.



Vickers-Armstrongs (Engineers) Ltd are using Duralumin 'J' to make the pistons for the Sulzer engines which are being incorporated in the new diesels on British Railways. Vickers chose 'Duralumin' because it combines high strength with light weight. These pistons are being produced in the James Booth Forging Department which houses the 12,000-ton forging press capable of producing large forgings up to a weight of 3 tons.

Consider the use of light alloy forgings in your business—you will find the James Booth service refreshingly helpful.

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The mechanical principle employed in this brake provides ample power with maximum safety and speed of application. Braking load is held at any position automatically and can be gradually or fully released with little effort by merely turning the wheel. This exclusive feature for holding the load at any point receives the enthusiastic endorsement of all brakemen. Quick release, WITHOUT ANY RECOIL OR BACKWARD SPIN of the hand wheel, is effected by pulling the full release handle. The brake is lubricated, and is entirely enclosed to give protection from the weather.

This brake is manufactured under license by Usines et Aciéries de Sambre et Meuse in France.

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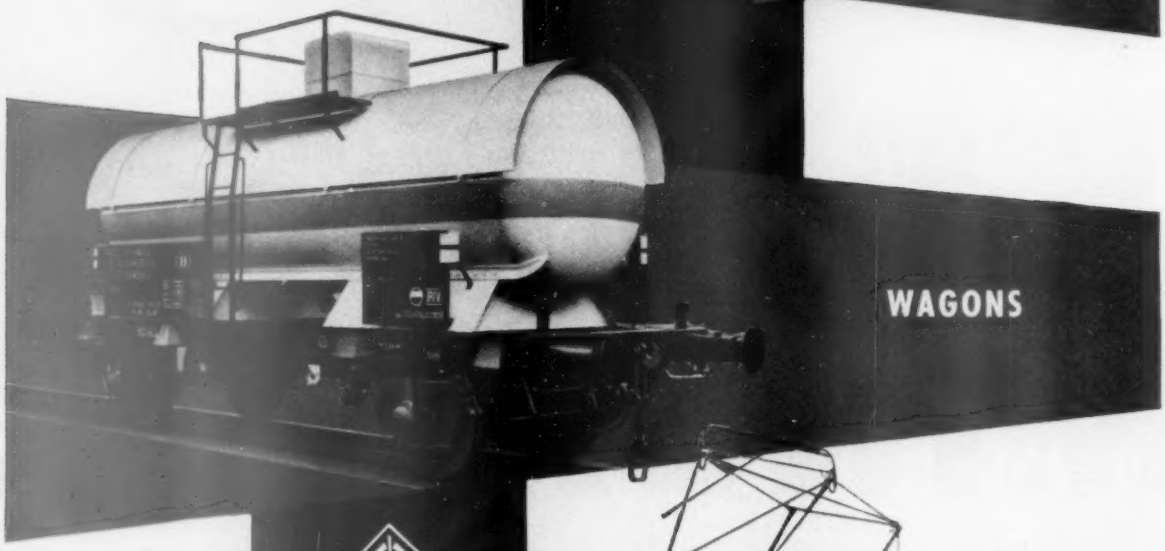
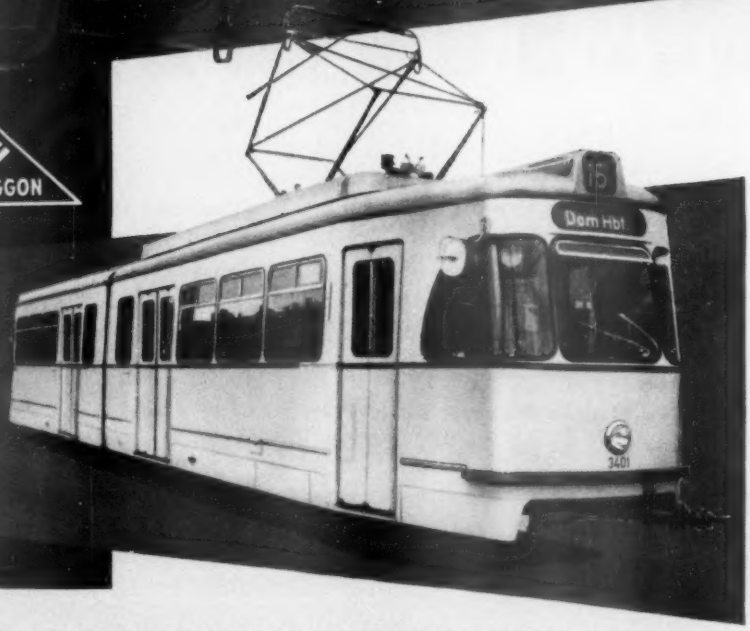
DEUTZ

DIESEL LOCOMOTIVES



WAGONS

WESTWAGGON



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Largest C.T.C. plant in Europe

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On January 30 this year the Swedish State Railways opened the first section of the C.T.C. plant on the Ljusdal—Långsele line. The C.T.C. office is situated at Ånge and, when the plant is completed, will control 41 stations extending over a distance of 170 miles. This will be the largest C.T.C. plant in Europe.

The C.T.C. equipment was supplied by L M Ericsson.

Ericsson LM

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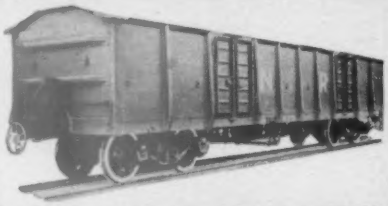
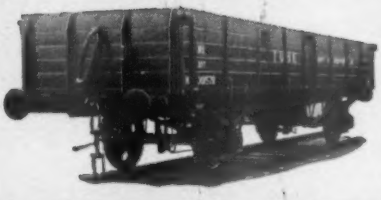


Cambrian

rolling



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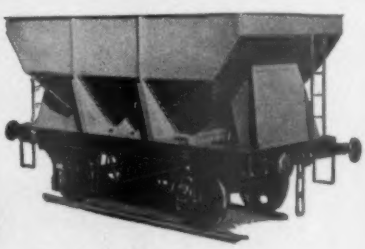
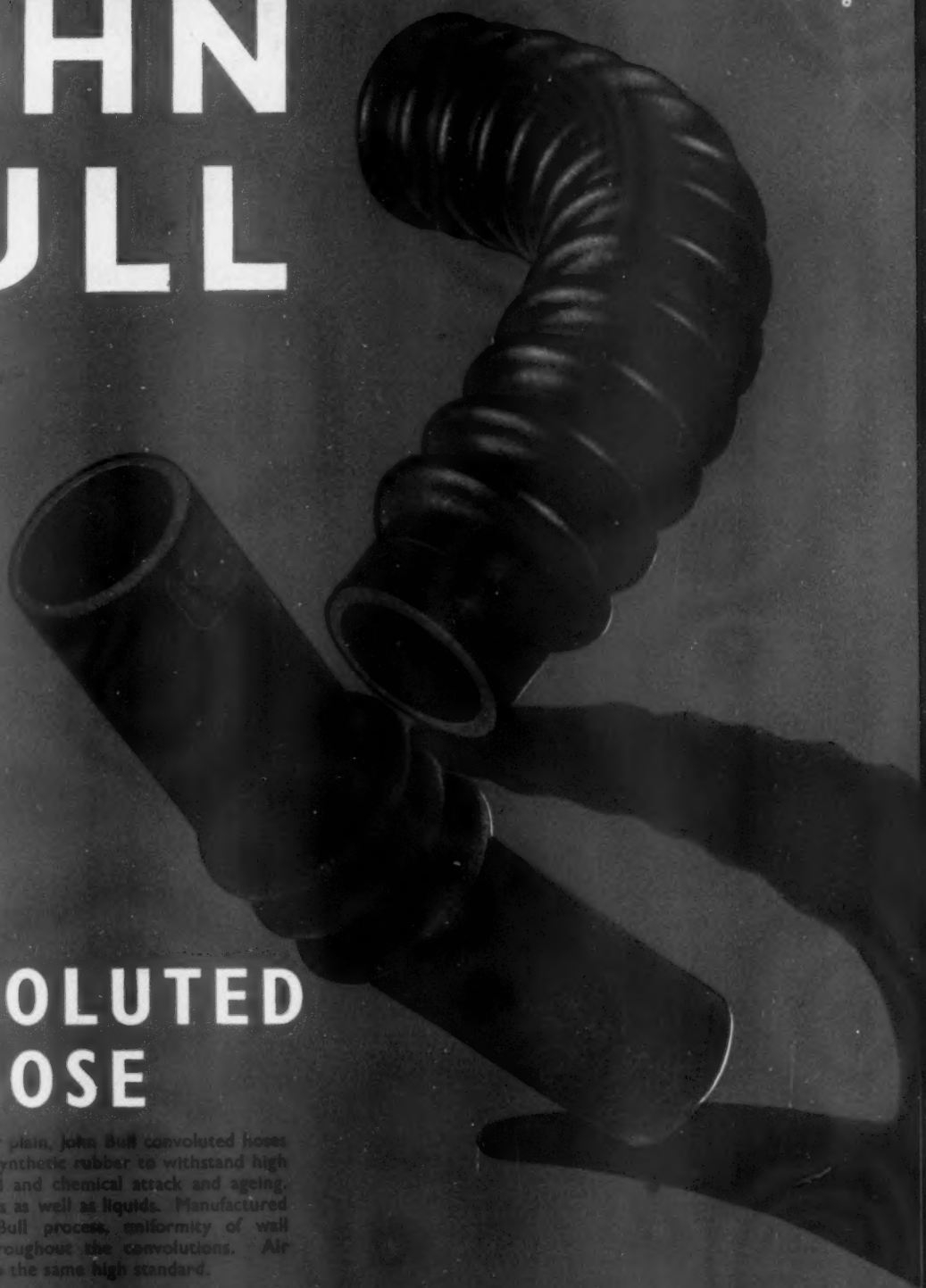


JOHN BULL



CONVOLUTED HOSE

Stockinette re-inforced or plain, John Bull convoluted hoses are made in natural or synthetic rubber to withstand high and low temperatures, oil and chemical attack and ageing. They are suitable for gases as well as liquids. Manufactured by the patented John Bull process, uniformity of wall thickness is retained throughout the convolutions. Air cleaner hoses are made to the same high standard.

All rubber hose is available in standard 4 ft. lengths in a range of diameters. Specially fashioned hoses can be manufactured to your requirements.

John Bull Traction Motor Ventilating Bellows are available in rectangular and circular form and can be produced to suit individual needs.

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AIR BRAKE EQUIPMENT for

Carriages and Wagons

OERLIKON PATENT DESIGN

TYPE EST3d.

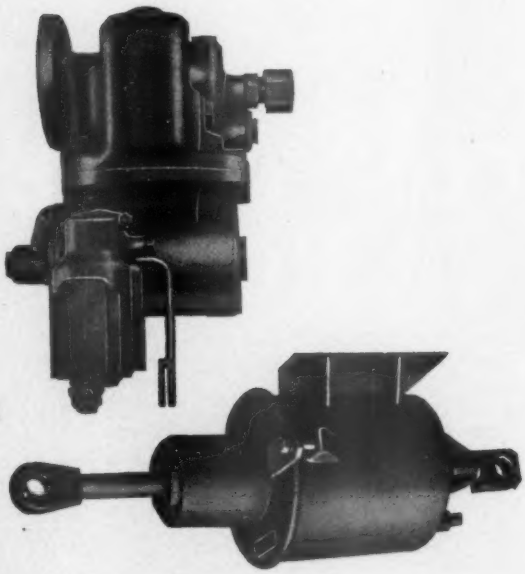
This standard and basic design of Triple Valve enables the controlled application and release of brakes on goods and passenger trains. It is suitable for all sizes of brake cylinder and is in accordance with the conditions laid down for the admission of goods and passenger trains for international traffic. Leaflet A.9.

TYPE EST4d/AL.

The AL device used in conjunction with the EST Triple Valve, as illustrated, enables the brake cylinder pressure to be regulated automatically in proportion to the load on the vehicle, thus enabling the maximum brake efficiency to be obtained under all conditions. Among the advantages associated with this equipment are the simplicity of installation, further, the brake cylinder filling and releasing times are unaffected by load changes. Leaflet A.8

TYPE EST4d/R TRIPLE VALVE

In this instance the type R device has been added to the EST Triple Valve to enable two-stage braking to be obtained. This arrangement when applied to high speed passenger coaches and controlled by the vehicle speed enables the maximum brake efficiency to be obtained and greatly reduces the distance required for stopping a train. This style may also be used for simple load and empty braking with the two stages Hand controlled. Leaflet A.5.



TYPE SB BRAKE CYLINDER

(Made under licence from STABEG)

A simple lightweight design of Brake Cylinder embodying a patent piston seal giving automatic lubrication to the cylinder walls and exceptionally long life to the seal. A further patent covers a security device which simplifies maintenance and examination of the Cylinder which is made in all standard sizes and styles. Leaflet A.14.

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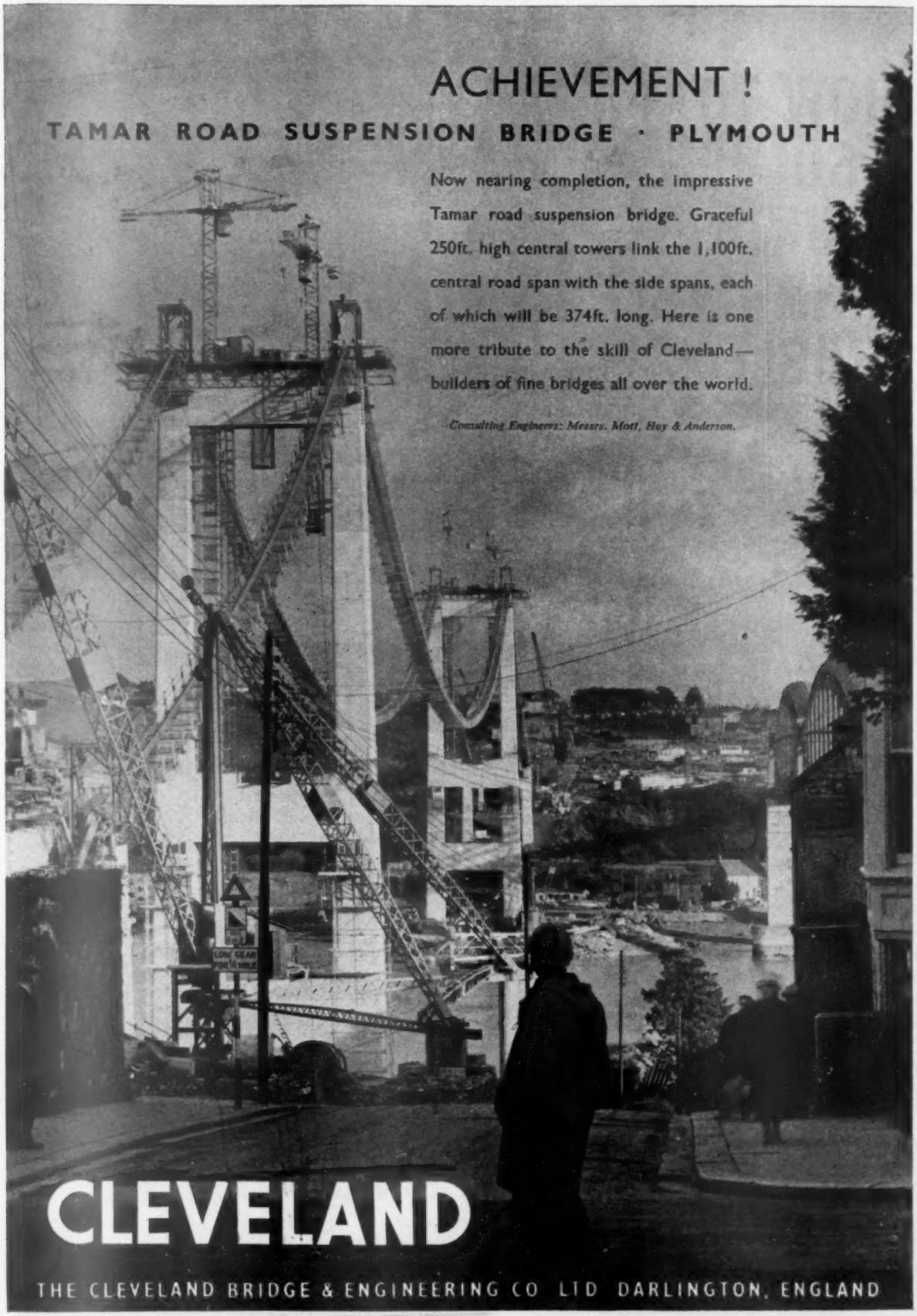
R.G.7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TAMAR ROAD SUSPENSION BRIDGE · PLYMOUTH
Now nearing completion, the impressive Tamar road suspension bridge. Graceful 250ft. high central towers link the 1,100ft. central road span with the side spans, each of which will be 374ft. long. Here is one more tribute to the skill of Cleveland—builders of fine bridges all over the world.
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THE CLEVELAND BRIDGE & ENGINEERING CO LTD DARLINGTON, ENGLAND

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NEOPRENE
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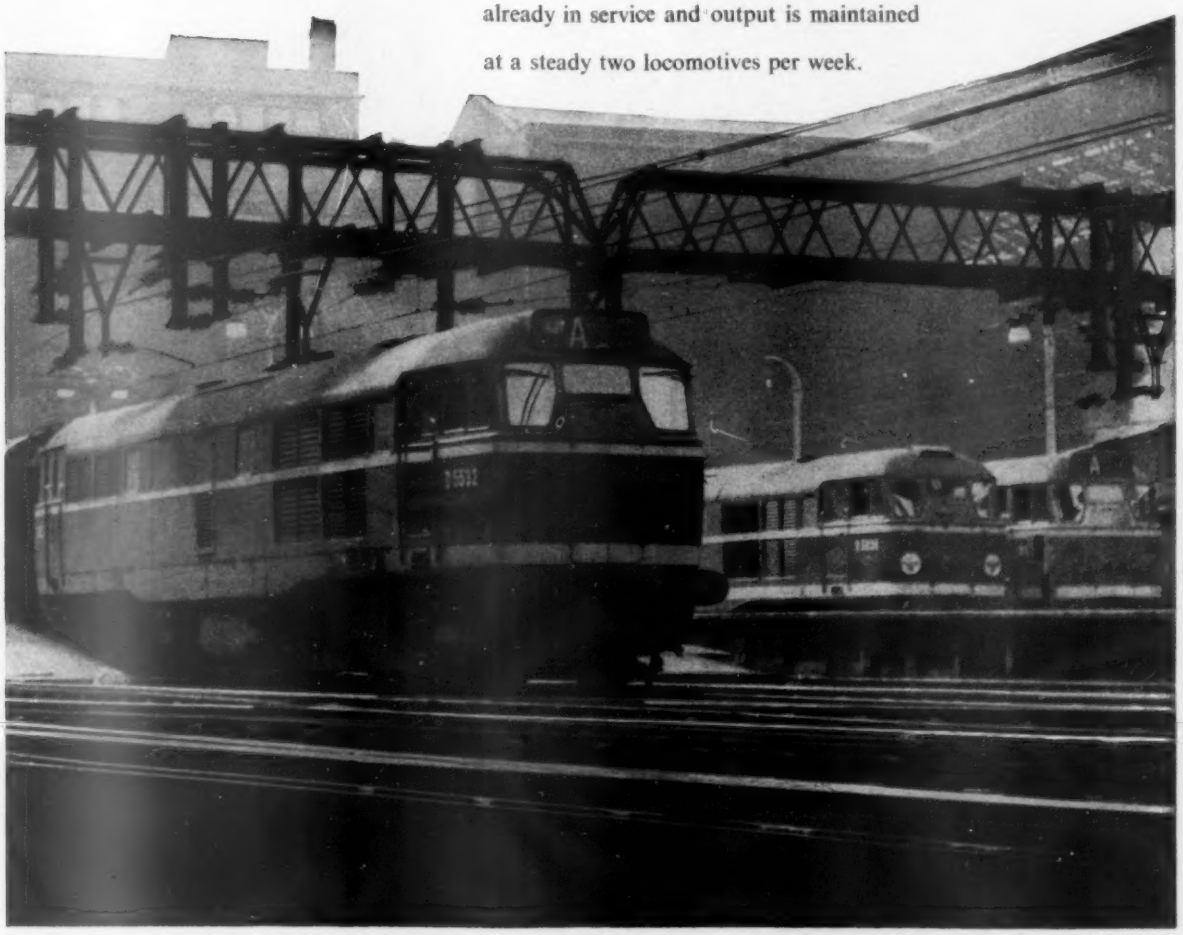
LOCOMOTIVES FOR BRITISH RAILWAYS

226 Brush Type-2,1250–1365–1600 H.P. Diesel Electric Locomotives have been ordered for British Railways, over half of these are already in service and output is maintained at a steady two locomotives per week.



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BRUSH ELECTRICAL ENGINEERING CO. LTD. LOUGHBOROUGH, ENGLAND *(A Member of the Hawker Siddeley Group)*

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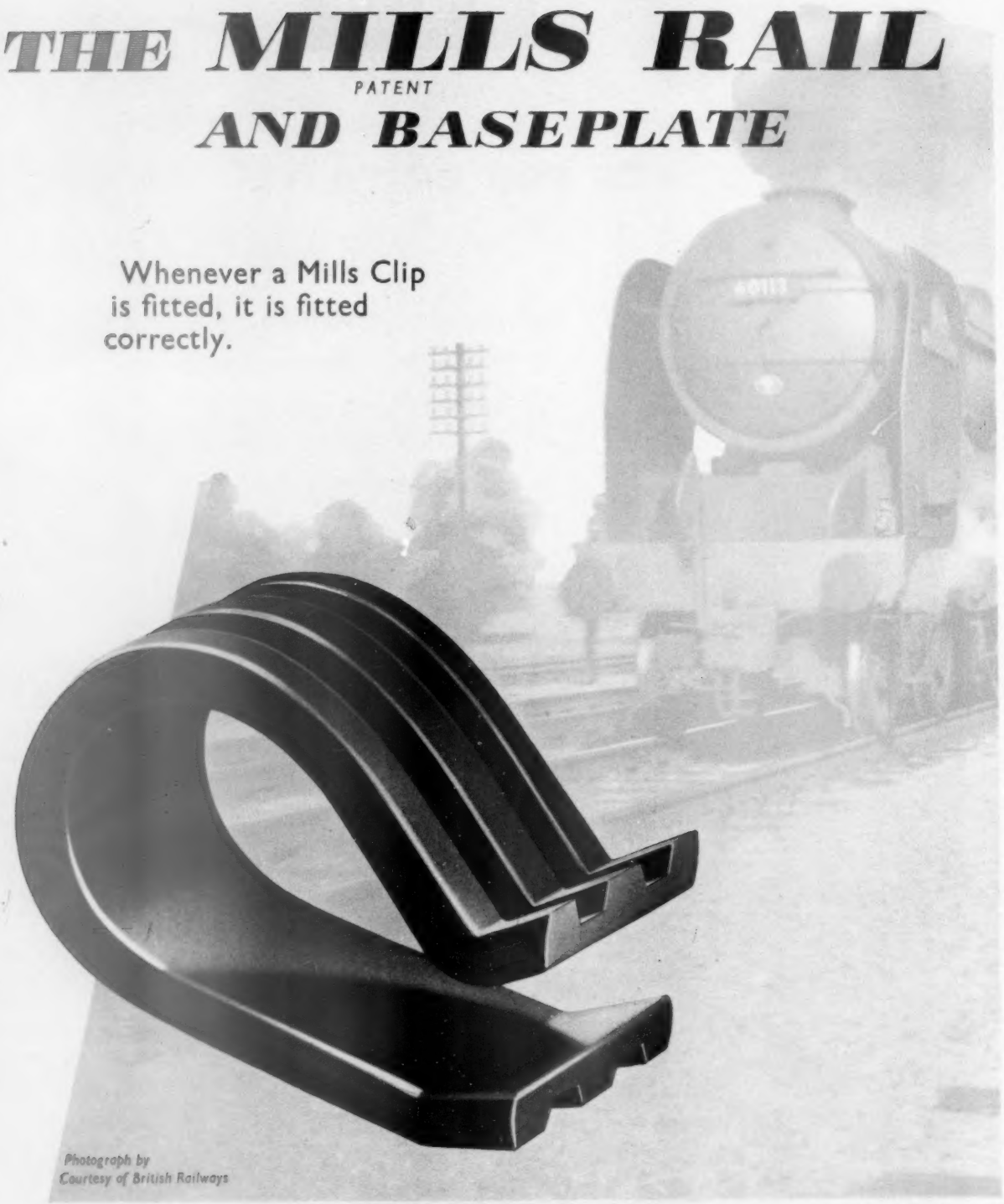
Whenever a Mills Clip is fitted, it is fitted correctly.



Photograph by Courtesy of British Railways

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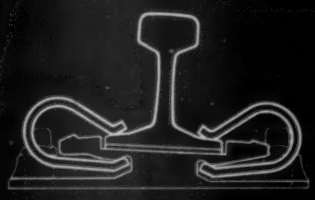
EXORS OF JAMES MILLS LTD

BREDBURY STEEL WORKS

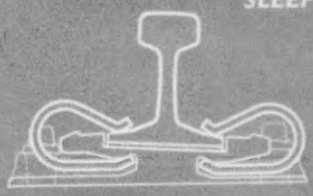
CLIP

FOR WOOD SLEEPERS



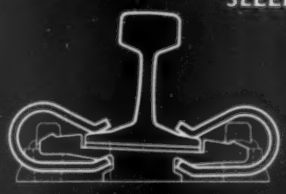
Four-hole baseplate with or without rubber rail pad.

FOR 'E' TYPE CONCRETE SLEEPERS



Two-hole baseplate, interchangeable with CSI Bullhead Chair.

FOR 'F' TYPE CONCRETE SLEEPERS



Small Area two-hole baseplate for main line use.

Every Mills Clip fitted applies a uniform load to the rail within a known range.

Very suitable for long welded rails and all heavy duty track

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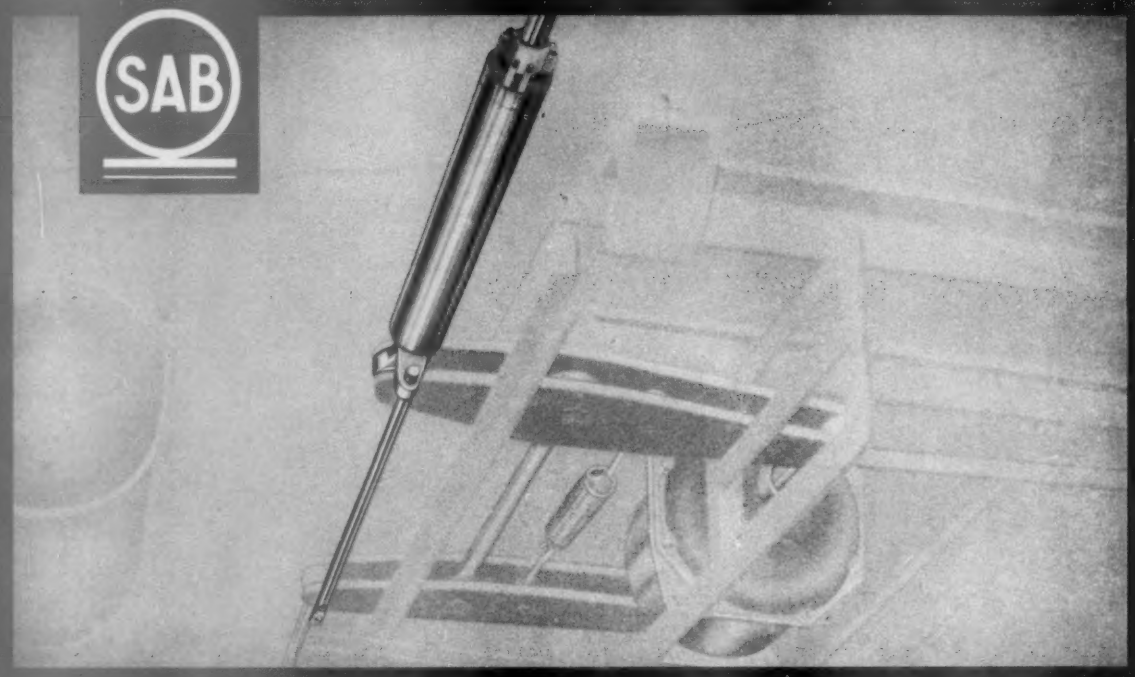
SAB DOUBLE-ACTING RAPID-WORKING BRAKE REGULATOR TYPE DRV



IN MORE THAN 50 COUNTRIES

Although the productions of the SAB Company cover a wide range of empty/loaded braking devices, the product most closely associated by railway engineers with the symbol SAB is the double-acting, rapid-working SAB Brake Regulator.
SAB Brake Regulators have been delivered to leading Railways in more than 50 countries all over the world. In most of these countries, SAB Brake Regulators have been adopted as a standard component of the brake equipment. They have gained a reputation for efficiency and reliability, resulting in an ever increasing number of installations on all types of railway vehicles.

BRAKE REGULATOR TYPE DRV

The most advanced member of the SAB slack adjuster family is the fully automatic, double-acting, rapid-working Brake Regulator Type DRV, the result of more than 40 years of specialised experience of automatic slack adjustment.
The DRV regulator is built into the brake rigging as part of a pull rod. It rapidly takes up or pays out slack, thus maintaining correct brake block clearances. In addition it contributes to easier replacement of worn brake blocks, no manual adjustment being required after the operation. The DRV Brake Regulator also makes it possible to use a simple mechanical empty/loaded braking device.

TECHNICAL ASSISTANCE

Whenever brake slack adjustment and empty/loaded braking problems require an effective solution, it is advantageous to consult SAB.
The SAB Company has built up an important service organisation which, with its expert knowledge, is ready to deal with any problem relating to brake rigging and brake installation for all types of railway vehicles.
The SAB Service Engineering Department checks proposed brake rigging designs and provides detailed installation drawings as a service to customers. It also assists whenever necessary at the actual mounting on the vehicle.

BROMSREGULATOR MALMÖ — SWEDEN

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Technical Brochure from

JOHN FOWLER & CO (LEEDS) LTD Sprotborough Foundry, Sprotborough, Doncaster

On the Liverpool St.,–King's Lynn run . . .

. . . with power by Mirrlees

A Mirrlees 1365 h.p. 'JV' engine powering a Brush type II locomotive is seen here leaving Ely.

Each week the engines made by Mirrlees—go to Loughborough . . . each week the locomotives made by Brush—go to Doncaster . . . each week, after the completion of Acceptance Trials further locomotives enter service on the EASTERN REGION.

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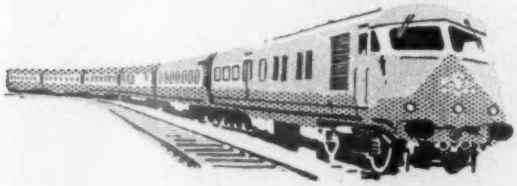

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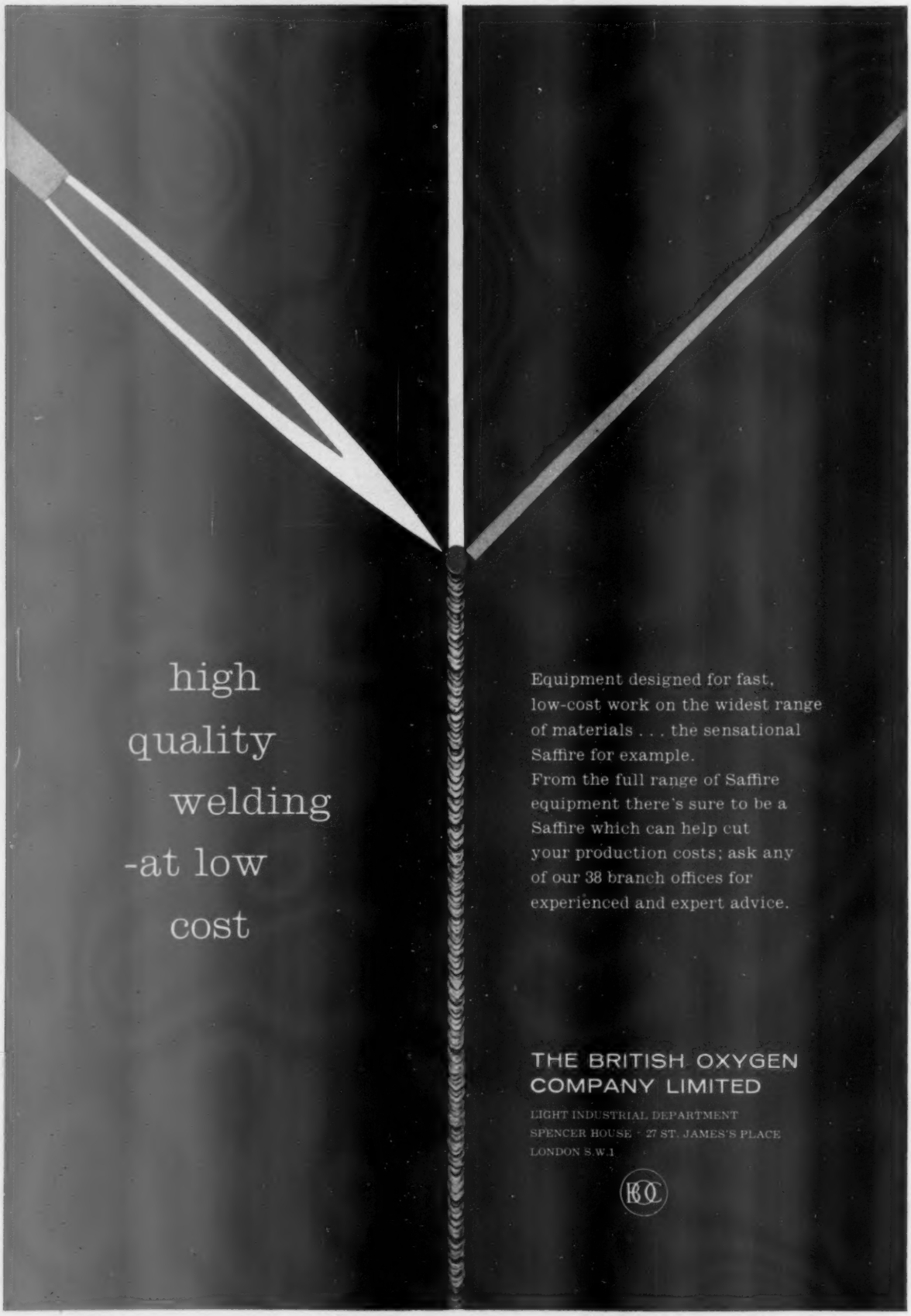
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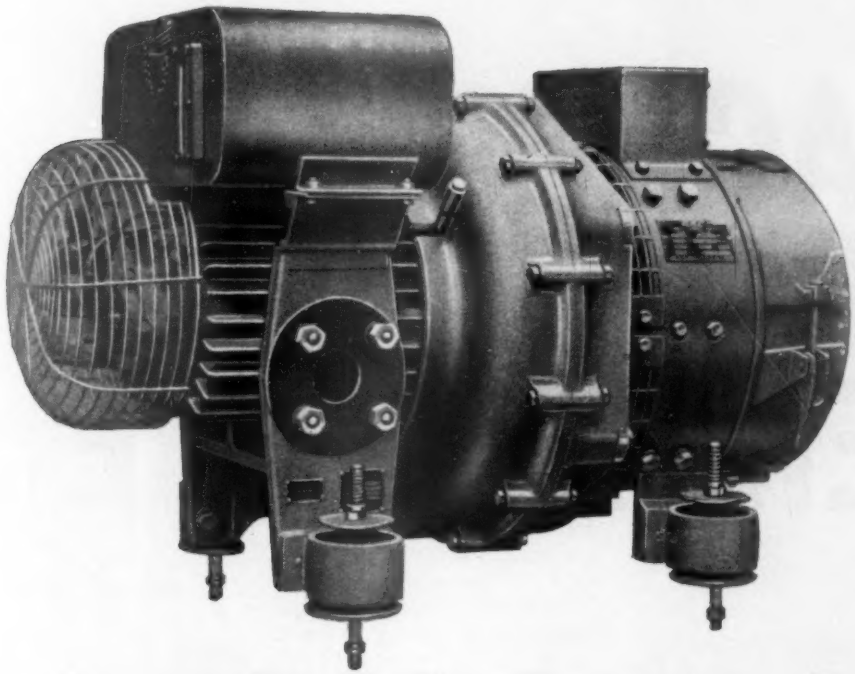

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The **Consolidated Brake—Reavell Exhauster** illustrated here offers maximum efficiency with minimum weight. These latest Flange-Mounted Exhausters are now being supplied to British Railways. For further details write to:

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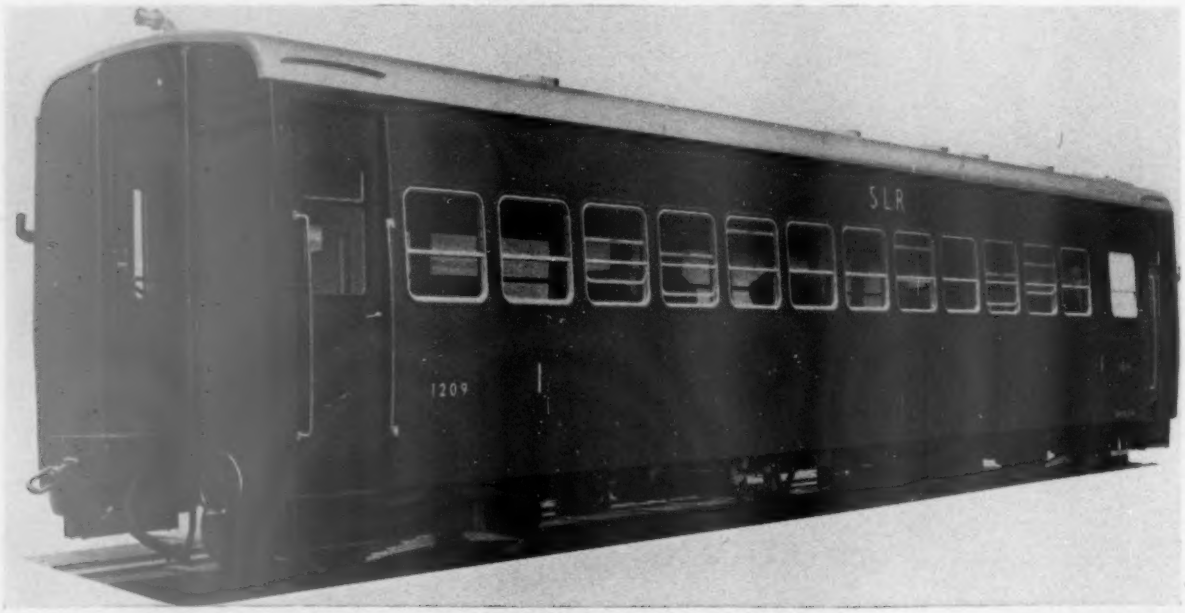
The illustration shows a first class coach, part of an order for 45 1st, 2nd, 3rd class and baggage coaches placed by Sierra Leone Government Railway with Gloucester.



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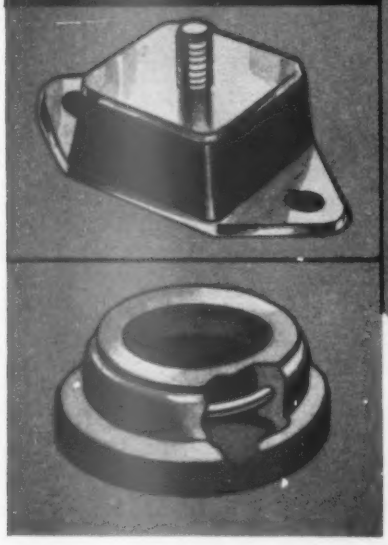

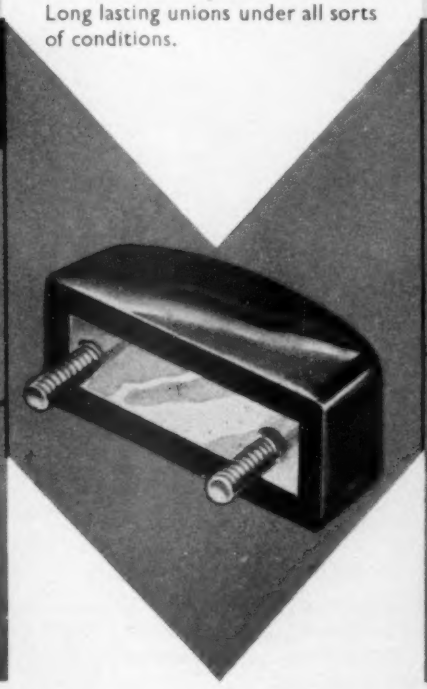

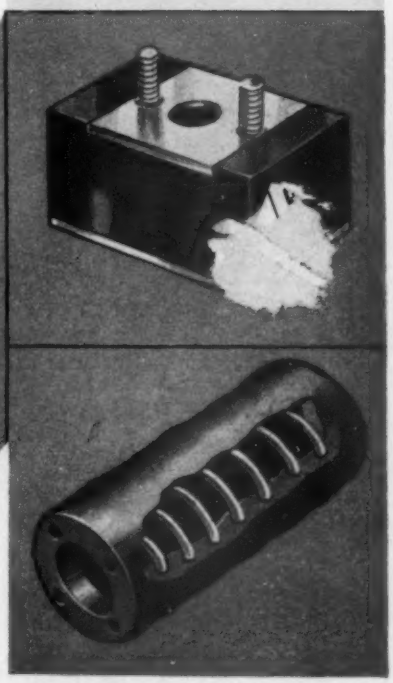

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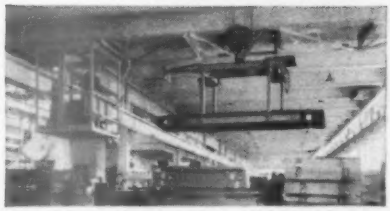
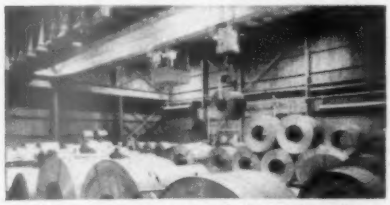


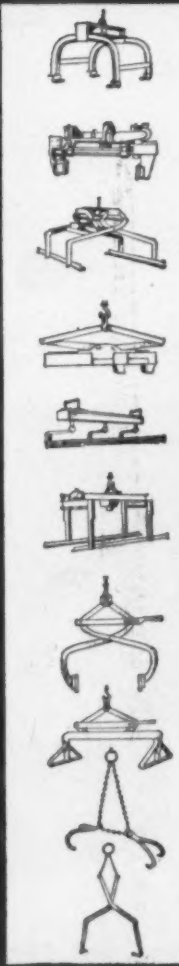
"Mansaver" Style 1142 4½-ton hand-operated grab handles sheet steel packages for Coventry Radiator. 48" to 112" length, 24" to 50" width. Leg adjustment for width by hand-chain wheel. End hooks fitted to support sheets at mid-span where required.

For Alcan Ltd. England—10½-ton motor-operated "Mansaver" Style 1142 handles aluminium slabs up to 85 feet long, 36" to 84" wide. 13 pairs telescopic legs are adjusted for load width by one common drive. Two-point suspension from overhead crane.



The "Mansaver" grab, Style 1588, motor operated rotating crane hook to give controlled rotation of loads where required. Illustration shows a "Mansaver", Style 1418, motor operated coil grab suspended from the hook.

50 tons capacity, "Mansaver" grab, Style 1142. Handling trays of aluminium coil at Alcan Ltd. Legs are power operated and controlled by overhead crane operator.



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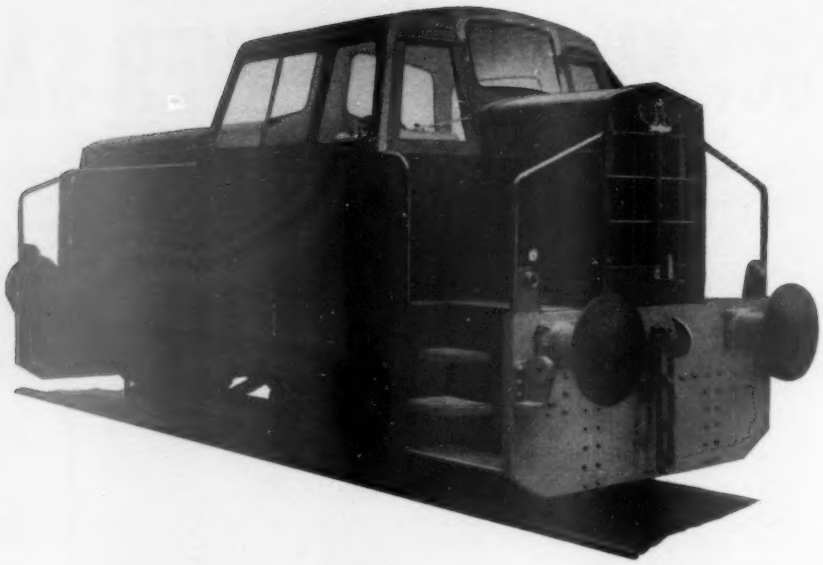

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View of cab interior showing dual driver controls.

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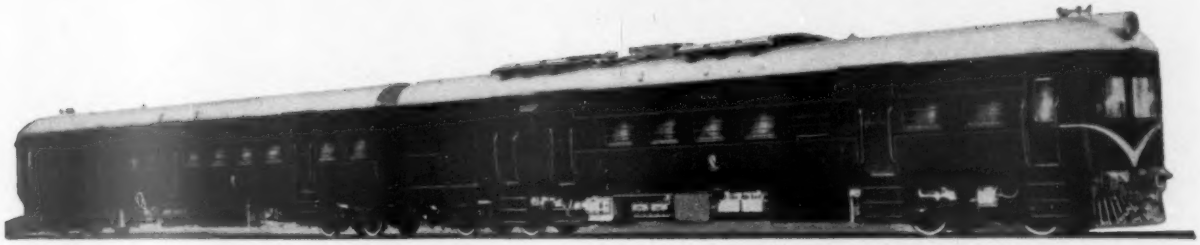
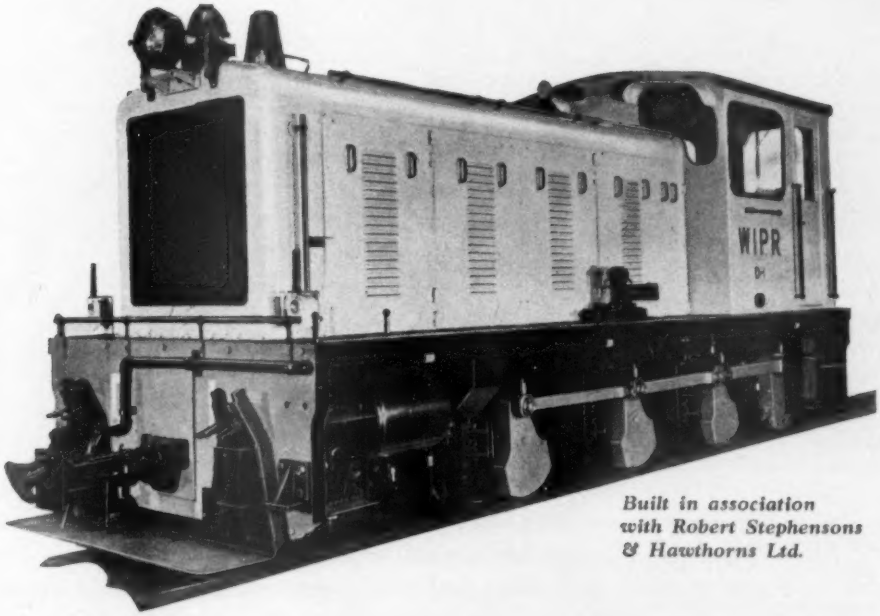


Built in association with The Birmingham Railway Carriage & Wagon Co. Ltd.

WITH MECHANICAL OR HYDRO-MECHANICAL TRANSMISSION

The upper illustration shows one of two Twin Car Units shipped this year to the Nigerian Railway Corporation, equipped with twin underfloor engines totalling 400 h.p. and multiple-speed epicyclic transmission with automatic control. The lower illustration is one of a number of 30-ton metre gauge Drewry locomotives recently shipped to Portuguese India, for freight and passenger duties.

AND LOCOMOTIVES



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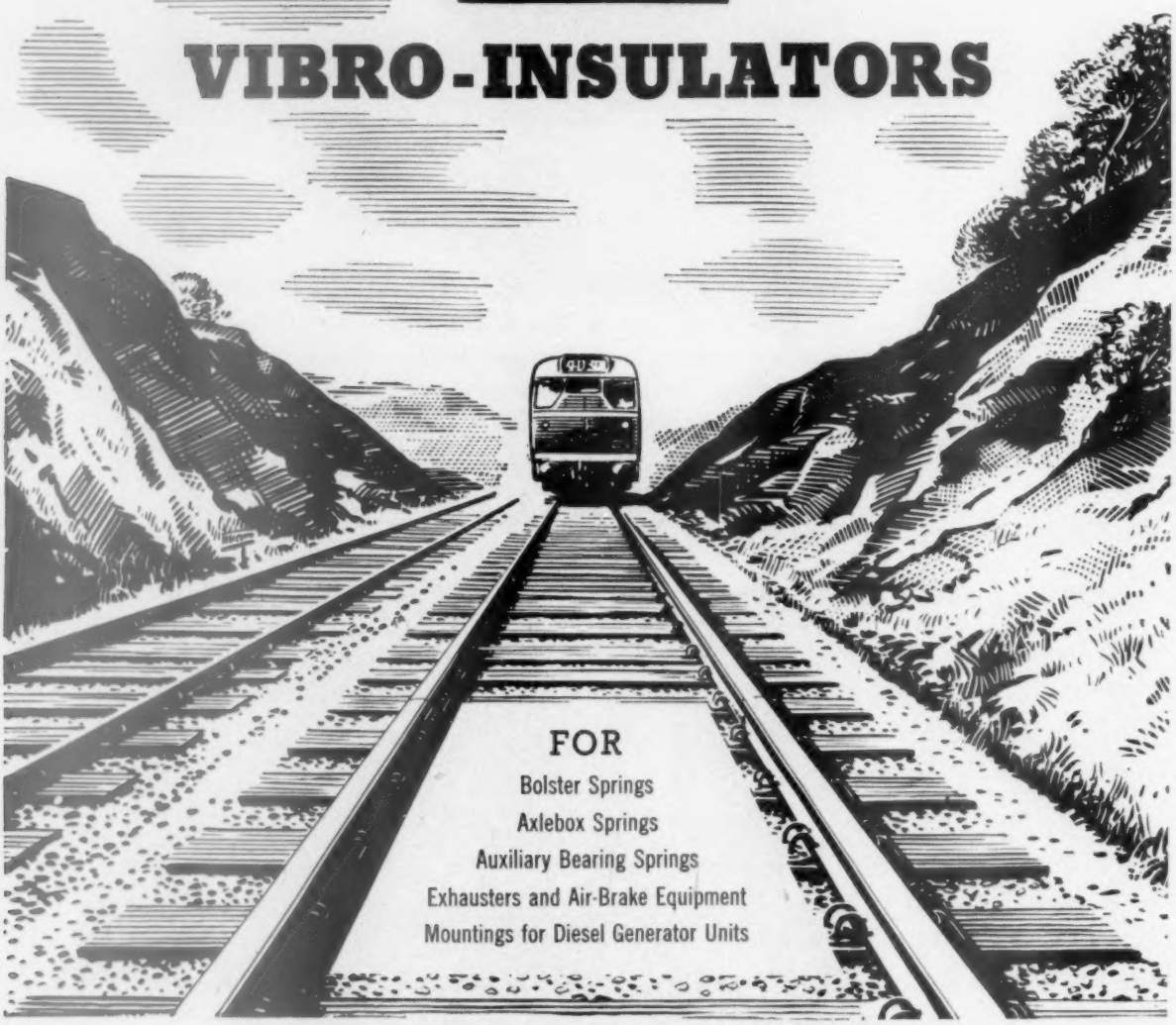
VIBRO-INSULATORS



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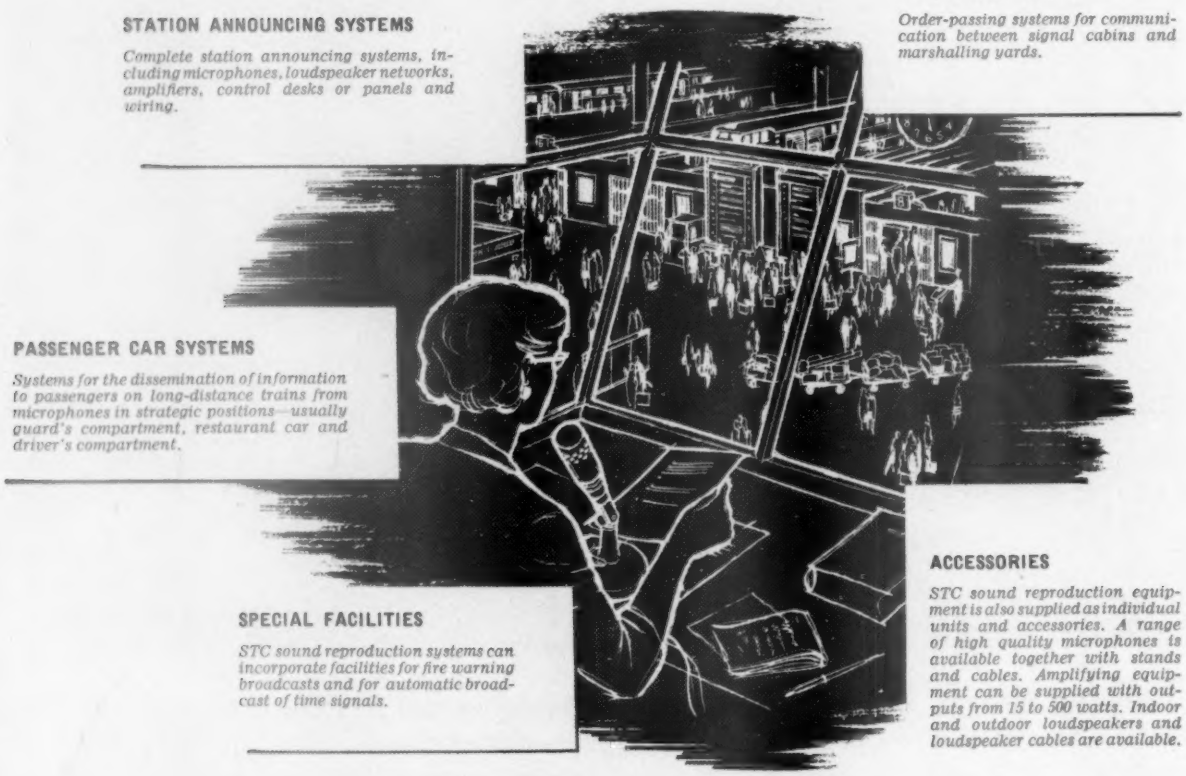
Complete station announcing systems, including microphones, loudspeaker networks, amplifiers, control desks or panels and wiring.

TRAFFIC SYSTEMS

Order-passing systems for communication between signal cabins and marshalling yards.



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STC sound reproduction systems can incorporate facilities for fire warning broadcasts and for automatic broadcast of time signals.

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STC sound reproduction equipment is also supplied as individual units and accessories. A range of high quality microphones is available together with stands and cables. Amplifying equipment can be supplied with outputs from 15 to 500 watts. Indoor and outdoor loudspeakers and loudspeaker cables are available.

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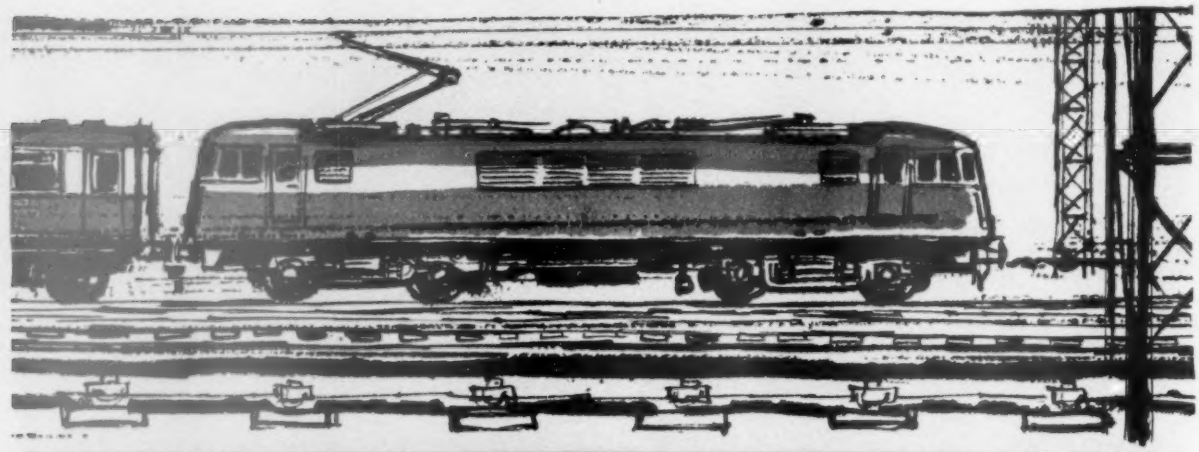

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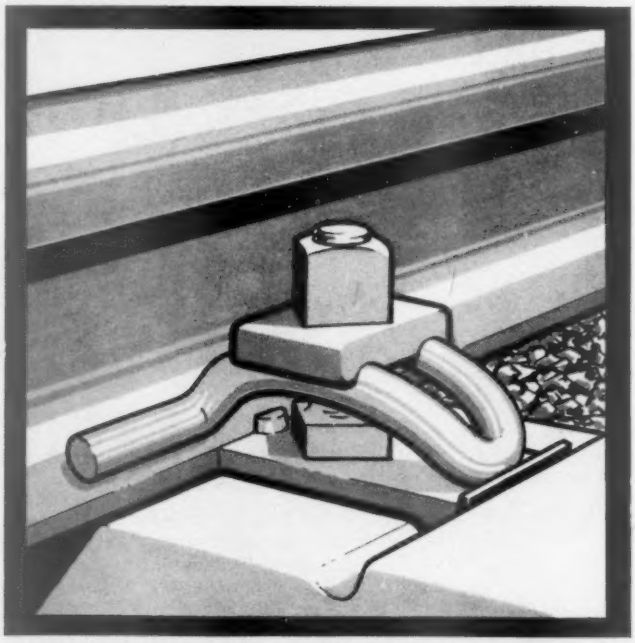
Today's 100 m.p.h. traffic makes big demands on the track. To help cope with this problem, Bayliss, Jones & Bayliss have developed resilient rail fastenings for use with concrete sleepers and long welded rails. Approved by the British Transport Commission, these tough spring steel fastenings are the latest additions to the BJB range, which still includes, of course, many traditional types of fastening.



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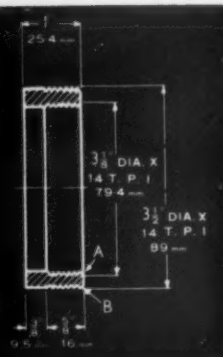
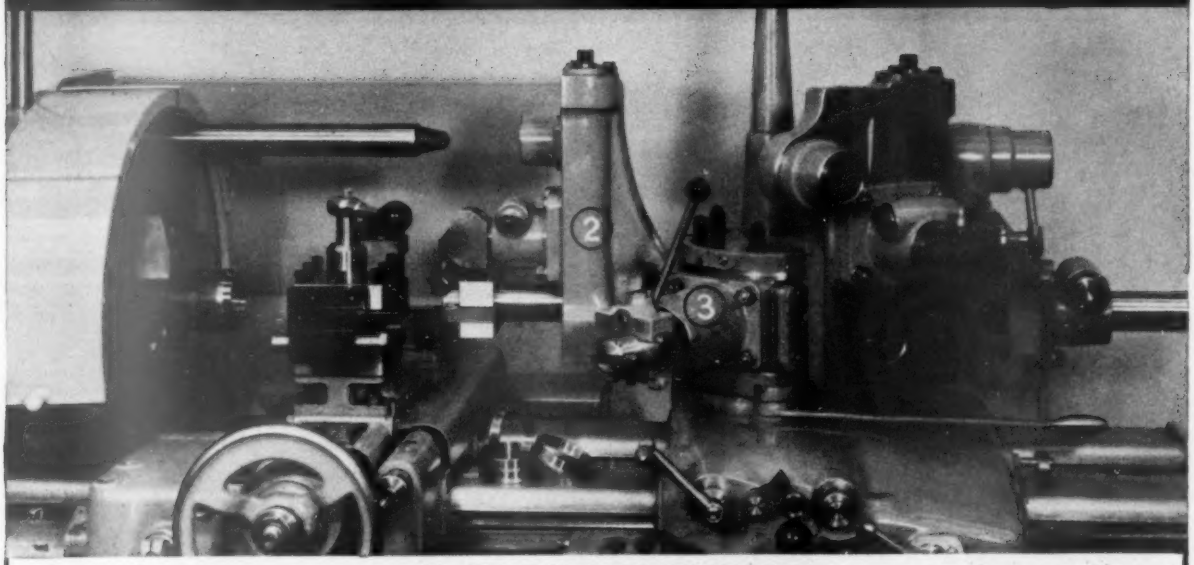
TOOLING LAYOUT No. 15





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	Hex. Turret	Cross-slide		Feet per min.	Metres per min.	Cuts per inch	m/m. per rev.
1. Feed tube to stop and close chuck -	1	—	—	—	—	—	—
2. Knee turn 3½" dia., bore, face end and chamfer "A" and "B" - -	2	—	683	627	191	134	·19
3. Back chamfer bore - - -	3	—	683	560	170	Hand	Hand
4. Cut threads 3½" and 3⅛" dias. × 14 t.p.i. Whit. form, right hand (7 cuts) -	—	S.T.1	683	627	191	—	—
5. Part off - - - - - -	—	S.T.2	683	627	191	Hand	Hand

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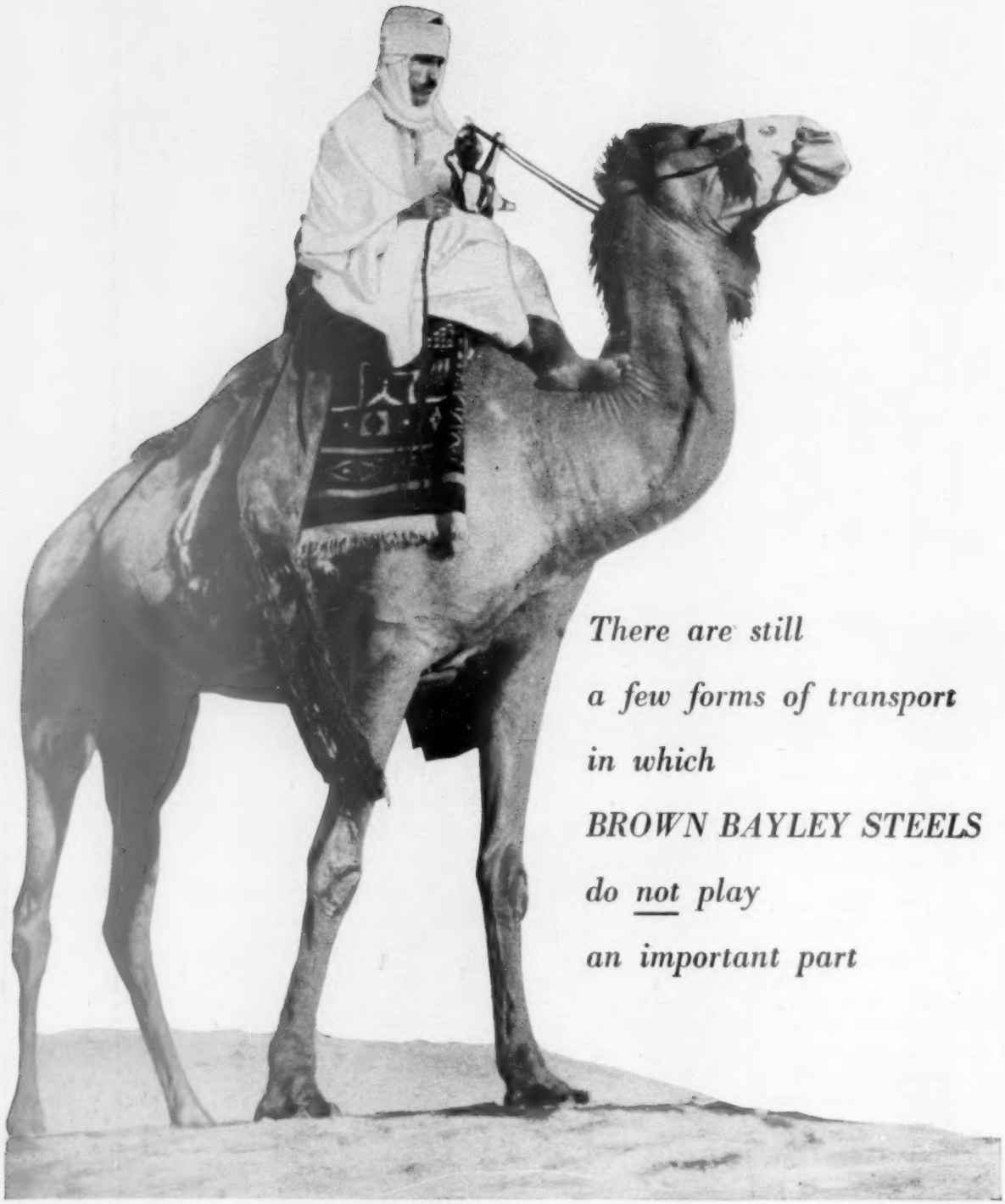

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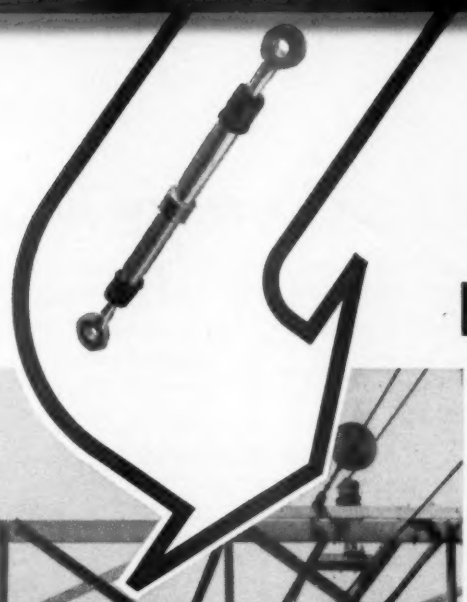

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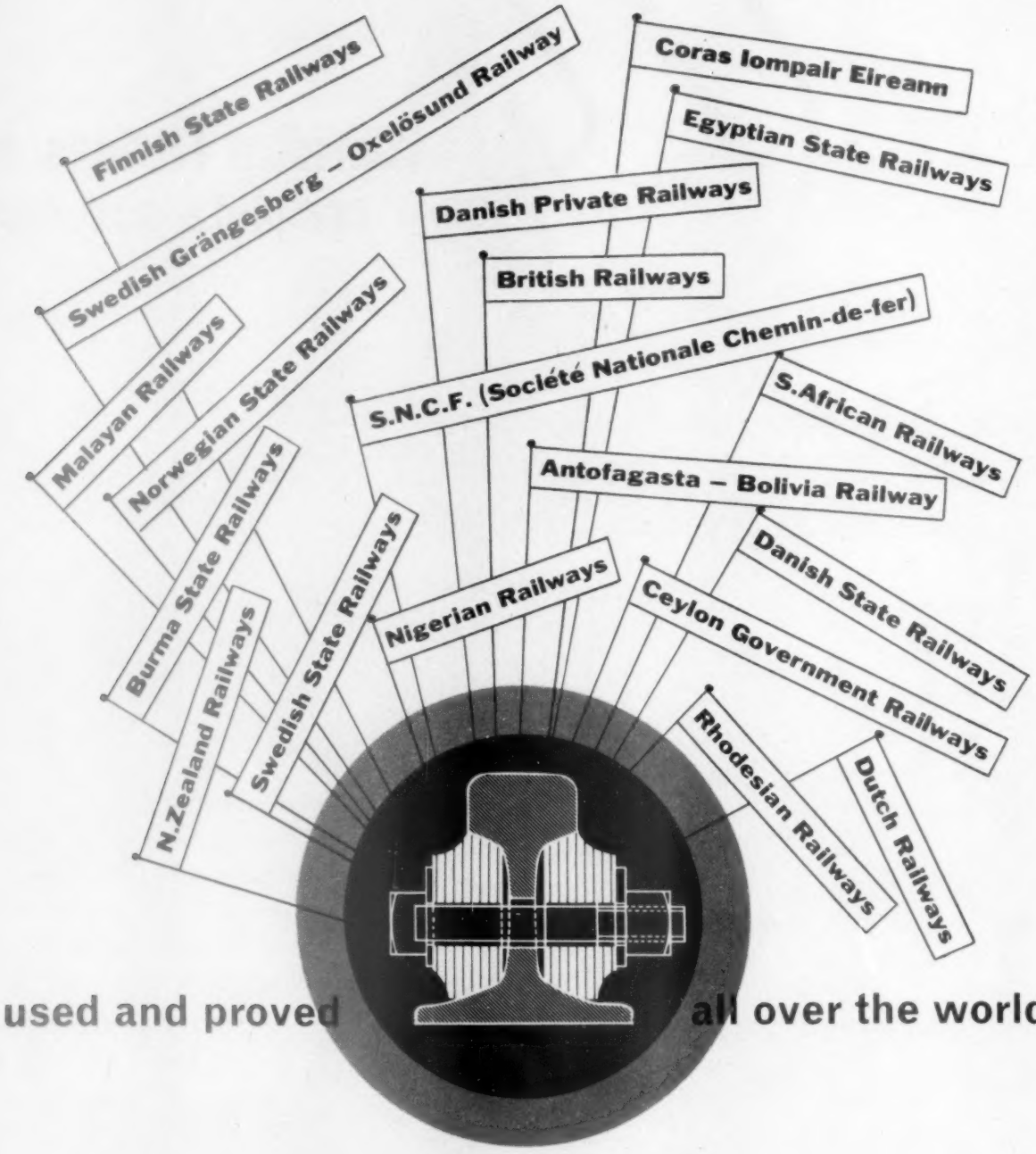

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A journal of Management, Engineering and Operation

VOL 115 FRIDAY SEPTEMBER 15 1961 No. 11

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International Railway Congress

PLANS are already reaching an advanced stage for the next International Railway Congress, which is to be held in Munich from June 17 to June 27 next year. The German railway authorities, as the hosts to the Congress, have prepared a programme of the work of the session and of the excursions to railway establishments and so forth for the delegates. Prof. Dr. H. M. Oeftering, First President of the Deutsche Bundesbahn, and President of the Organising Committee of the Congress, has received the approval of the Permanent Commission of the International Railway Congress Association for the arrangements which have been made. The Presidents of the five sections of the Congress have also been chosen and Mr. P. Ghilain, the General Secretary, gave their names to a recent meeting of the Permanent Commission in Brussels at which Mr. De Vos, the President, was in the chair. They are Mr. E. Kessler, of the German State Railways, Dr. Ing. A. d'Arbela, of the Italian State Railways, Mr. R. Guibert, French National Railways, Mr. J. E. M. Roberts, British Railways, and Mr. A. Sjöberg, Swedish State Railways. The importance of these international railway congresses may be judged from the membership of the association which includes some 150 railways in all parts of the world; the total railway mileage represented is some 374,000.

Railway economic problems

A SOBER, balanced, and forward-looking report has been submitted by the International Union of Railways (U.I.C.) to the European Conference of Ministers of Transport (E.C.M.T.) in response to a request of the Council of Ministers made in May, 1960. The views and conclusions are stated to be valid in any country with a basically competitive economy, but are framed to regard transport as a whole and to avoid an approach defending at every point the narrow interests of railways. While accepting that railways have the character of a public utility and form part of the basic national economic framework, the report stresses that the business of a public carrier should be profitable. To this end, railways should be regarded as industrial or commercial undertakings, with wide freedom of action, and not made instruments of social or economic policy. Both in capacity and quality, the transport system should be able to meet present and future needs, and free choice of the means of transport should be allowed to the user (including the provision of his own transport) provided he pays an equitable price and that competition has equality in its basic conditions.

Export training for management

AN EXPORT training centre for top management, the first of its kind in Britain, was opened on September 7 at Sundridge Park, Kent. It has been set up by Sundridge Park Management Centre to provide comprehensive training facilities on a residential basis. Beginning on September 11, three-week courses will be held at regular intervals. Planned in consultation with an advisory panel set up by the Federation of British Industries, these are intended for managing directors, export directors, and senior sales executives concerned with the promotion of exports. All main factors affecting export policy and marketing procedures will be studied as they affect both large and small organisations, irrespective of type of product manufactured. Subjects covered will include selection of markets; conducting of market surveys, appointment of selling agents, methods of determining prices, control of overseas sales forces, and advertising. Special attention will be paid to Common Market trading and selling to Communist countries. Lectures will be given by representatives of industry, commerce, Government departments, and other official bodies.

International commission for transport museums

EXPERTS from transport museums in nine European countries and from the U.S.A. met in London this week for the third annual conference of the International Commission for Transport Museums. The conference was opened by Lord Brabazon

of Tara at the Science Museum, South Kensington, on September 11 and lasted until today, September 15. The International Commission for Transport Museums was set up in 1956 to encourage the establishment of transport collections and the preservation of transport relics throughout the world. During the five days of the conference, delegates heard papers on the development, preservation, and presentation of transport collections; inspected the Science Museum's transport exhibits, and toured the newly-established museum of British transport at Clapham. This contains the largest collection of public transport relics of its kind. Delegates also travelled to Beaulieu to see Lord Montagu's motor museum and to visit the Palace and Beaulieu Abbey as guests of Lord and Lady Montagu.

A generous gift

WHEN Mr. Henry Maxwell, a London business executive and a self-described " railway enthusiast," approached the Pullman Car Co. Ltd. with his generous conception of the gift of a Pullman car to the Museum of British Transport, he was met with an enthusiasm and generosity as great as his own. Embracing the idea with customary vigour, Mr. Frank Harding, Managing Director of the company, his officers, and, in particular Mr. N. Johnson, Chief Engineer, at Preston Park, set to and prepared the first class saloon " Topaz " in the livery she bore from 1930 to 1935. A detailed description of the car is given in this week's " Scrap Heap." If the Transport Museum is to be extended to include in its public section the beautiful and historic large exhibits—including several authentically-furnished Royal coaches—which were on view at Clapham this week, it must receive the support, and particularly the financial support, of many more individuals like Mr. Maxwell and Mr. Harding. Without money, the necessary adjuncts to the existing premises cannot be provided.

Terrorist attacks on railways

IN TIMES of civil insurrection no less than in war, attacks on railways are frequent because of their tactical and strategical importance. During the state of emergency in Malaya, which lasted some ten years, the railway was a particular target for attack. In an article elsewhere in this issue, Mr. H. J. Iron, who was Locomotive Superintendent at the time, gives an overall picture of the difficulties which the railway faced and of many of the counter measures which the Administration took to overcome the difficulties of operation. Mr. Iron has retired from the service of the Malayan Railway and is now resident in this country. Obviously, he has not been able to put into an article for widespread publication all the details of the precautions and methods which were adopted to overcome attacks for to do so might well prove of assistance to railway saboteurs who might become active in other parts of the world. On the other hand, he has expressed his willingness to supply full details to railway administrations or responsible railway officers who may be faced with similar conditions, and for our part, we should be happy to forward requests of this kind to Mr. Iron for his attention.

Pullman express for South Wales

THE important and constantly-growing business community in South Wales has long awaited a fast, *de-luxe* passenger service between its principal cities and London, and especially one timed to give a reasonable interval each end to allow business to be carried out before a meal. This requirement was met last Monday, when a " Blue " Pullman diesel service was brought into operation between Swansea and Paddington on the Western Region of British Railways. On an inaugural run carried out the previous Wednesday, the train showed that it would maintain traditional Great Western standards of comfort and service. The riding was exceptionally smooth at 90 m.p.h. and in no way interefered with the enjoyment of a meal prepared and served with customary Pullman efficiency. Early passenger reactions give every indication that this train will enjoy the success it deserves.

Britain's Railway Queen

BRITAIN'S Railway Queen for 1961-62, Miss Susan Garside, of Southport, was crowned at the Railway Employees' Carnival at Belle Vue, Manchester, on September 9, in succession to Miss Sheila Riordan of London. The toast of Britain's Railway Queen was proposed by the Joint Presidents of the day, Mr. D. McKenna, Assistant General Manager, British Railways, Southern Region, and Mr. G. W. Brassington, Assistant General Secretary of the National Union of Railwaymen, who paid tribute to the way in which Miss Riordan, the retiring Queen, had performed her duties and thanked her for the way in which she had devoted herself to the work of fostering peace and goodwill among railwaymen. Later the Joint Presidents, officiating on behalf of the management and the trade unions of British Railways, performed the ceremony of crowning Miss Garside, the daughter of a Southport passenger guard, Britain's Railway Queen, 1961-62. This annual event has continued, with the exception of the war years, for 36 years and Miss Garside is the 31st Railway Queen to be crowned.

Computer use simplified

COGO—co-ordinate geometry—offers greatly-simplified communication between civil engineers and computers. Announced recently by Professor C. L. Miller, Director of the Civil Engineering Systems Laboratory at the Massachusetts Institute of Technology, the programming system enables an engineer to give instructions to digital computing machines in the same words which one engineer would use in describing a problem to another engineer. Without such a system, it is necessary to instruct the machine in a pseudo-language more closely related to the computer's circuits than to the engineer's problems. Operational versions of the system are already in use at the Massachusetts Institute of Technology and at the Puerto Rico Department of Public Works. A variant, especially designed for the computer to be installed by the Massachusetts Department of Public Works, is nearing completion. Current research is aimed at attaching a draughting machine to the computer to enable words intelligible to a draughtsman to be used. The goal is a system completely freeing the engineer from routine work.

Big orders from Rhodesia Railways

RHODESIA Railways has placed orders to the value of £2,862,700 for locomotives and rolling-stock. The locomotives will comprise 14 diesel-electrics at a total cost of £1,250,000 from the Brush Electrical Engineering Co. Ltd. (referred to briefly in our Contracts & Tenders section last week) and a further 16 diesel-electrics to the value of £1,300,000 from the English Electric Co. Ltd. The Brush units will be similar to the 1,365 and 1,600-b.h.p. Type 2 locomotives being provided for British Railways and already in service on the Ceylon Government Railway. Destined for operation in Rhodesia on the 3-ft. 6-in. narrow-gauge system between Bulawayo and Malvernia, they will be powered by Mirrlees JVS12T 12-cylinder diesels, fitted with HSBT turbochargers and developing 1,730 b.h.p. under the high ambient temperatures experienced in Rhodesia. The English Electric locomotives will be of 1,875 h.p. and will have a 1-Co-Co-1 wheel arrangement. They are similar to units already supplied to East African Railways & Harbours and to Rhodesia Railways: on the Rhodesian system, one recently established a record of 14,662 miles in a month.

Increasing goods traffic

THE wagons ordered by Rhodesia Railways comprise 100 covered bogie wagons and 15 tank wagons suitable for fuel oil or water. Worth £312,700, the orders have been placed with Dorman Long (Africa) Limited. The covered wagons will cost £268,600. They are required for the Beira tobacco traffic, which is expected to rise by 600-700 tons a week to 4,200 tons weekly during 1962. During the rainy weather, which does not coincide with the tobacco season, the wagons will be used for general goods traffic. Fuel oil traffic continues to increase on Rhodesia Railways, and more tank wagons will be needed even if a refinery now under consideration is built. The in-service cost of the tank-wagons will be £44,100. In the year ended June, 1961, general goods traffic on Rhodesia Railways went up by over 500,000 tons compared with the previous financial year to a record figure of 5,124,539 tons. Over the same period, liquid fuel and oils carried rose by over 11 million gal. to 133,560,000 gal.

Victorian Railways and level crossings

PARTICULARLY interesting in view of the opinions recently expressed by Colonel W. P. Reed, Inspecting Officer of Railways, Ministry of Transport (recorded in our issue of September 1) is a statement issued by the Victorian Railways Commissioners relating to the number of motorists who run into trains or level crossing gates. The Commissioners have cited five incidents involving irresponsible behaviour on the part of motorists at level crossings in Victoria. In each instance, the accident has been reported to the police, who will make investigations. Repairs involved are in the order of several hundred pounds, and the Railways Department will take action to recover costs in all cases. In stressing that, in general, the driver of the car involved had driven off without leaving evidence either of his identity or of the acceptance of his guilt, the Commissioners thought it was hard to understand how motorists kept crashing into gates unless their cars were faulty or they were guilty of careless driving. Level crossings, particularly those with crossing gates, are quite conspicuous, especially at night.

Sudan transport problems

SOME of the problems which face the transport system of the Republic of the Sudan were outlined briefly by General Ahmed M. El Bahari, the Minister of Communications for that territory, at a luncheon given in his honour by the Chairman and Members of the United Kingdom Railway Advisory Service in London, on Tuesday last. The Minister explained that transport, which in the Sudan was basically railways, was always in the public eye and calls for its improvement were constant. A million square miles had to be covered and his country needed motive power and equipment. Mr. John Ratter, a Member of the British Transport Commission, who presided, explained that the United Kingdom Railway Advisory Service was a joint organisation supported by the British Government, the British Railways, and British manufacturers. It was willing to place at the disposal of railway organisations the experience which had been gained over the years and particularly in the British Railways modernisation plan, which had been achieved speedily but only by solving many problems in a very complex transport environment.

Exit steam on Kowloon-Canton Railway

THE last steam engines in service on the British section of the Kowloon-Canton Railway are to be replaced by three diesel-electric locomotives. The disappearance of the wartime-built steam locomotives from Hong Kong's 22-mile railway system connecting Tsim Sha Tsui with the Chinese frontier at Lo Wu completes that railway's transformation from steam to electric traction. The new 1,800-h.p. diesel-electric locomotives, built and supplied by the General Motors Corporation of America, and capable of hauling 15 or 16 loaded passenger coaches, are expected to go in service early this month. With an individual weight of about 98 tons, each has a maximum speed of 62 m.p.h. and is powered by a 16-cylinder two-stroke engine with six traction motors mounted on two six-wheel bogies.

Export credits

THE Export Credits Guarantee Department is a Government organisation under the President of the Board of Trade. Its function is to provide credit insurance for exporters against many of the risks of non-payment. It is self-supporting, and fixes its terms of business and its charges accordingly. Otherwise it would both be a burden on the taxpayer and would give rise to the belief that we were giving a concealed but real subsidy to British exports. Yet its charges are moderate when all the relevant circumstances are taken into account.

It does not provide finance for exports. That is the job of the banks and " the City " generally. By insuring against many of the risks of non-payment it makes it cheaper and easier for exporters to obtain finance. Insurance cover granted by the Department is assignable to those providing finance. In such circumstances, if a claim arises it is made directly by the banker to the Department with little or no extra trouble to the exporter.

The Department's Head Office is in the City, but it has 14 branch offices—two in London and 12 in leading industrial centres in Great Britain and Northern Ireland. Thus access to it is easy. An exporter can approach it either direct or through his bank.

Various kinds of policies are granted, according to the kind of business. Thus there are different policies according to the length of credit which the exporter has to give his customer—short-term, medium-term or long-term. To cover his short-term business, an exporter can insure a single transaction or obtain comprehensive cover for all his exports for one year or in some cases three years ahead. There are also schemes for insuring medium-term and long-term business. There is a new and special streamline scheme for " small exporters," in which paperwork is cut to a minimum. This is limited to new entrants into the export field with an annual turnover of less than £10,000; and after two years or when he has done £20,000 of export business it is expected that he will take out the normal E.C.G.D. cover.

The risks covered by an E.C.G.D. policy can be summarised briefly, but detailed information relating to each particular case must be obtained from the Department. Broadly, the following risks are covered: insolvency or default by the buyer; overseas government action, including the blocking of payment in sterling to the exporter; the cancellation of current import licences, or the imposition of fresh import licensing restrictions; war, revolution or civil disturbances in the buyer's country; additional handling, transport and insurance charges incurred after export through interruption or diversion of voyage which cannot be recovered from the buyer; any other cause of loss occurring outside the United Kingdom and not within the control of the exporter or the buyer (and not normally insurable with commercial insurers).

There are certain limits to what E.C.G.D. will insure. Thus goods are not insured up to the last farthing of their value, for the exporter is expected to retain a reasonable interest. Again, there is no cover for loss resulting from the buyer's failure to comply with existing import and exchange control regulations. On these points, too, detailed information applying to each transaction must be obtained from the Department.

Whatever the length of the credit to be insured, the exporter makes to the Department an initial once-and-for-all payment, analogous to a " single premium " insurance policy. Obviously it will cost more to cover a transaction for which payment is to be made over several years than it will to cover one when

payment is due within six months. Again, in fixing its charges, the Department takes into account the kind of transaction, what it knows about the individual prospective buyer, and above all its assessment of the economic and financial risks attaching to a particular market. Indeed, for its own guidance, it divides the countries of the world into four categories, A, B, C and D, according to the degree of risk. Wild horses would not drag from the Department the category to which a particular country belongs.

Exporters of railway material naturally deal as a rule with overseas governments or government organisations; for most railways today are nationalised. This removes the risk attaching to an individual trader. Yet it is doubtful if this makes much difference to the premiums quoted by the Department.

Nearly all policies granted by the Department are in effect " tailor made." Yet one or two very approximate figures can be mentioned by way of illustration. The average rate for all business in which the buyer receives credit for not more than six months is around ten shillings per £100 insured, that is, ½ per cent. By way of contrast, take a constructional project, with payment spread over five years from the date of the contract, but 40 per cent to be paid on completion. Here, for an " average good " market the premium might be 44s. per £100; for a " poorer " market it might run up to £3 5s. per £100. As has been said, these are initial once-and-for-all payments. Amortised over the period of the credit they are much less than they seem.

Like any insurance company, the Department retains the right to refuse to insure a particular transaction. It bases its decision on the wealth of information it has accumulated from our Government representatives all over the world. This is of use to exporters. If the Department refuses to cover a particular piece of business, the exporter is probably well out of it.

This is a very brief description of what E.C.G.D. does. It is hoped that enough has been said to convince exporters of the wisdom of making use of the Department's facilities and incurring the attendant cost. Certainly it makes much easier the basic problem of financing exports, especially when the buyer requires extended terms of credit. On the other hand, there is little doubt that to give the maximum aid to exporters there is good ground for arguing that greater flexibility in the operation of the Export Credits Guarantee Department is desirable if the export trade of this country is to be stimulated. " Working to rule " may be reasonable in times of equal trading between nations. In present circumstances, a greater appreciation and willingness to meet individual needs would have better results from a national viewpoint.

London Transport in 1960

THE report for 1960 issued by the London Transport Executive shows that, although the year brought marked progress in certain directions, there were serious difficulties in others. Last year's result was improved on, and there were net receipts, after meeting all working expenses and provisions for depreciation, of £7·9 million, leaving a margin of £1·4 million after meeting the Executive's contribution to the central charges of the British Transport Commission. Of the £1·8 million improvement in net receipts, £1·4 million came from the road services and £0·4 million from the railways. Gross passenger receipts totalled £83·3 million, an increase of £4 million or 5·1 per cent over 1959. This increase was derived from revisions of fares, offset in part by a continuation of the declining trend of traffic. There was little change in freight and miscellaneous receipts, which produced about £400,000 in both years, or in net income from commercial advertising or letting of sites. Working expenses totalled £77·4 million—£2·3 million, or 3·1 per cent, above the previous year. These expenses were more than accounted for by increases in wages. Their cost was partly offset by reductions in working expenses on road services, brought about by mileage reductions enforced by severe staff shortage. New assets cost the Executive £14 million during the year, and assets with a book value of £2·9 million were withdrawn.

Although the financial results in themselves were moderately satisfactory, the £1·4 million margin was below the level needed to put the undertaking in a sound financial position and had been achieved largely through the savings of expenses in working the road services as a result of the shortage of staff and the increased earnings of the smaller number of buses in service. At the beginning of 1960 the percentage of drivers and conductors required was 8·5. Discussions had been opened with the Transport & General Workers' Union on a bonus scheme devised to improve service and increase earnings. In March, 1960, a straight wage increase was negotiated, but this did not materially improve the position and the bonus scheme was again put forward. As before, it was rejected by garage representatives. In October, a negotiated wage increase added about 25s. a week to the busman's earnings and the staff situation improved immediately and with it the volume of road services operated. The Executive also applied to its railway staffs the consequences of the pay review on British Railways. Together, these increases amounted to about £6½ million a year. Other prospective increases brought the whole additional sum required to £7½ to £8 million a year.

Increases in fares were authorised and introduced in May, 1960, and January, 1961. Designed to bring in £5¼ million a year, these were insufficient to meet the higher costs and, in November, 1960, a further increase was sought.

There was a drop of 4·6 per cent in passenger-numbers compared with 1959 and a decline of 2·4 per cent in passenger-miles. The loss of passengers was wholly on the road services and the main reduction was in short-distance traffic. The reverse tendency showed on the railways. Major factors included the staff shortage, increased road congestion, and the poor summer weather. Four further stages of trolleybus conversion were completed, and it is believed that the loss of road traffic would have been greater but for the replacement of the old trolleybuses with Routemasters. Traffic on country buses and coaches was maintained. On Green Line coaches, passengers rose by 0·3 per cent, and passenger-miles fell by 3·3 per cent. Rail traffic continued to grow, with increases of 0·8 per cent in passengers carried and 0·5 in passenger-miles.

During 1954–60, passenger traffic entering Central London during the morning peak period rose by 7·8 per cent. London Transport railways and British Railways recorded increases of 10·1 and 14·1 per cent respectively. London Transport road services traffic fell by as much as 19·8 per cent, but the most striking change was the 56·4 per cent increase in the use of private transport.

On the Metropolitan Line, electric services were extended to Amersham and Chesham in September. Special timetables were operated during the work of modernisation. Already in operation on the Piccadilly and Central Lines, full-length trains throughout the day were extended to the Northern and Bakerloo Lines at the end of the year. A new timetable on the District Line in October provided more running time through the Central area during peak periods to allow for extended station stops.

Relations with the public in 1960 were principally influenced by the shortage of bus staff and the consequent deterioration of services. The difficulties were explained, and the Executive wishes to acknowledge the general understanding of the public. On the Underground, relations with the public improved.

The Diamond Jubilee of the Central Line was celebrated by an exhibition in the hall at Charing Cross Underground Station. The end of steam haulage on the Chesham branch was marked by a run for a party of invited guests in a special train.

During the year, the Transport Users' Consultative Committee for London held a number of special meetings to deal

with representations from Local Authorities and members of the public. An examination was made of public transport facilities in south-east London.

The cheap fares range was enlarged. In conjunction with British Railways, cheap tickets were issued to Southend and to 13 south and south-coast destinations. During the year, 2,100,000 cheap evening return tickets were sold, a decrease of 3·6 per cent compared with the previous year. Cheap-day return tickets were issued from many Metropolitan Line stations to Rickmansworth and beyond in the Chilterns; just under 50,000 were sold.

In addition to the New Works already referred to, the following developments took place: experimental one-man-operated buses were placed in country service; work continued on the doubling of the tracks north of Harrow-on-the-Hill to the junction of the Watford branch north of Moor Park; 216 more cars of the type already ordered for the Watford, Amersham, and Chesham services were ordered to use on the Uxbridge line to complete the standardisation of stock on the Metropolitan main line; progress was made in the introduction of high-capacity trains on the Piccadilly and Central Lines; new signalling equipment was installed on the eastern section of the District Line to Upminster, and a research laboratory was opened at Chiswick. Car parks were opened and extensions to existing parks were completed. As well as the major projects affecting the Metropolitan and the eastern section of the District Line, improvements to signalling were carried out on the Wimbledon branch of the District Line. Where London Transport lines approached the newly-electrified high-voltage lines of the Eastern Region, a system to guard against the possibility of interference from the adjacent British Railways track equipment was developed in association with the manufacturer of the equipment. The mechanisation of permanent way maintenance proceeded with the development of a tamping machine to suit the special conditions in London Transport tracks. A method was developed to support the track during re-laying operations in tube tunnels, where extreme accuracy of positioning is essential. A train unit for 300-ft. welded running and conductor rails was designed and constructed to carry 18 instead of the previous maximum of eight rails and to provide for mechanical loading and unloading of the rails. The last bank of escalators serving the eastbound Central Line platform at Notting Hill Gate was brought in use, and the renovation of the Central Line platforms at that station completed. A booking hall was opened at Wapping. Work began at Blackfriars in preparation for the lengthening of platforms and at Tower Hill on a project to carry an office building over the railway. Research was carried out in connection with the construction of the Shell building at Waterloo, in which the former "Festival of Britain" underground entrance is to be reinstated. Planning is taking place on measures for the realignment of the Metropolitan Line in connection with the Barbican development scheme, and with the reconstruction of main-line termini at Cannon Street, Euston, Kings Cross and Victoria, which will effect the associated Underground stations.

The proportion of passengers carried by the railways has grown. On British Railways suburban lines, improvements arising from the Modernisation Programme have contributed to the increased volume of traffic: on the Underground it has not been possible to make substantial improvements. The new rolling-stock programmes and the Metropolitan Line improvements will stimulate some new traffic, but peak-hour traffic on the Underground has risen since 1954, even though at many important points an acceptable standard of convenience and comfort is not always being offered. The position will only improve when the rolling-stock replacement programme has been completed, the Victoria Line built, and other works carried out. The report stated the conclusion was clear that improvements to the Underground system, which would make journeys quicker or easier were certain to lead to an increase in Underground traffic and a corresponding reduction in traffic seeking to use road vehicles: the same applied to British Railways lines in the London area. The total number of people entering the Central area in the peak hours continued to grow. This was an important aspect of the problem of growing unbalance between the volume of employment and population in the built-up area, the root cause of growing congestion in peak-hours.

New Zealand Railways

IN his introduction to the report of the New Zealand Government Railways for the 12 months to March 31, 1961, Mr. John McAlpine, Minister of Railways, pointed to the "particularly gratifying" reduction of nearly 90 per cent in the operating deficit, which was cut to £62,759 against a deficit of £563,133 in the previous year. This was achieved despite an increase of £1 million for higher wage rates and overtime payments because of staff shortages. The gross revenue of £36,238,998 was a record, as also was the total tonnage of 10,830,033 of goods and livestock conveyed. Emphasis had been on efficient train operation and services to the public, and a very creditable effort had been made by management and staff alike. Efficiency had been greatly improved. The policy of gradually increasing the diesel locomotive fleet would be continued, allied to a forward building programme for new wagon stock.

The report, a copy of which has been sent to us by Mr. A. T. Gandell, the General Manager, shows an overall increase in suburban passenger journeys. Although non-suburban traffic decreased, the fall was substantially less than that of recent years, despite greater use of private cars and air travel.

Total goods and livestock traffic rose 2.72 per cent and was 1.42 per cent above the previous peak in 1955-56. Goods movements in the North Island went up 4.7 per cent to a record 6,901,384 tons, and revenue by 5.4 per cent to £977,829. In the South Island, although traffic was slightly lower at 3,928,649 tons, revenue improved 1.4 per cent. Gross expenditure for the whole undertaking increased by 2.26 per cent, individual items being wages, depreciation and renewals, which were offset by decreases in stores and materials and locomotive fuel. Railway operating net revenue improved by £427,633. Subsidiary services' net results worsened by £8,404, but there were improvements in road services of £66,019 and for miscellaneous non-operating revenue of £15,126.

The principal financial and other results of the year's working were:—

Source	1960-61 Million	1959-60 Million
Passenger journeys	26.23	26.13
Goods tonnage	10.19	9.88
Total train-miles (revenue)	14.77	14.48
	£million	£million
Coaching traffic earnings	2.82	2.79
Goods traffic earnings	27.89	26.78
Total revenue	36.23	34.93
Expenditure	36.30	35.50
Net revenue or loss	— 0.06	— 0.56
Interest charges	5.55	5.38

The total number of passenger journeys rose by 98,850 to 26,233,430. A decline of 29,678 in non-suburban journeys was considerably less than in recent years. Suburban traffic continued at a satisfactory level, but expenditure here far exceeded revenue. Compared with other forms of suburban transport, charges were very low and revised fares have been announced.

Mr. Gandell devoted part of his report to a comparison of North and South Island operations. North Island services earned £21,398,420 for an operating expenditure of £19,471,212, but South Island revenue at £10,030,718 fell short of expenditure by nearly £2million. The North Island's greater density of traffic, average haul, and higher-rated traffic brought reduced costs. With almost exactly the same

route-mileage, ton-miles in the North were 2,922 million against only 1,280 million in the South. As a result, total railway operating expenditure per 1,000 gross ton-miles was £613s.3d. in the North and £97s.9d. in the South.

There was a further rise in the Department's rail-air service and, for the seventh year in succession, traffic carried was a record at 49,662 tons, against 40,704 tons. Goods train performance continued to improve and there was an advance of 112 million gross ton-miles hauled though no new locomotives went in service during the year. The benefits of diesel traction and continued emphasis on improved methods of handling general goods traffic contributed to substantial operating economies. Mileage run by coal-fuel locomotives dropped 390,245 miles, while that run by diesel-powered locomotives and railcars increased by 507,834 and that run by oil-fired steam locomotives by 139,459 miles.

Mr. Gandell concluded by describing the forward look as a challenging one. The practice of offering incentives to customers prepared to negotiate long-term contracts for bulk transport of goods would be further developed.

Bridge over the Indus

ON June 30 the two halves of the steel-arch span over the main channel of the River Indus on the Rohri–Quetta line of Pakistan Western Railway met and were joined up. This arch with its 807-ft. clear span is believed to be the third longest railway arch in the world. It is in replacement of the famous Lansdowne cantilever bridge completed in March, 1889, and unique in its design, the Forth Bridge having not then been completed. The new bridge is 120 ft. downstream from the old one.

The original design for the new bridge was of the more usual type, consisting of two spans of 285 ft., one of 310 ft. and two 40-ft. approach spans. This design involved two mid-channel piers with very deep foundations and, when tenders were invited, the cost proved to be over £1,600,000. The Pakistan Railway Board therefore decided that a single-span steel-arch structure should prove more economical, and entrusted its design, specifications and tender documents to the late Dr. D. B. Steinman of New York. In response to a world-wide call for tenders, the lowest received was from Dorman Long-Gammon, and the figure was approximately £1,135,500. With approaches and other ancillary works the total cost of the new bridge was estimated at £1,500,000. The old and new (partly completed) bridges were illustrated on page 232 in our issue of August 25.

The steelwork for the arch has been fabricated at Dorman Long's works at Middlesbrough, and work for the deck at Braithwaite & Company's works at Great Bookham, Surrey. Field work began on Christmas Day, 1959, so that completion of the arch ribs has taken about 19 months from that date. From the railway point of view the most unusual feature in the design of this arch is that railway decking is suspended by bridge strands as in a suspension bridge, and in road-bridge arches.

Actually, this bridge spans only the Rohri or southern and main channel of the Indus carrying the railway on to an island about ¼ mile wide, a smaller branch of the river, the Sukkur Channel, then being crossed by a comparatively insignificant bridge. This great river, believed to be about 1,700 miles long and to drain some 372,000 sq. miles, is crossed by the Western Railway at five points, namely Attock on the main line to Peshawar, at Khushalgarh, still in the Himalayan foothills, at Kalabagh, where it debouches from them, at Sukkur—the bridge now discussed and known as the Ayub Arch, after the President of Pakistan—and at Kotri not far from its mouth and from Karachi.

LETTERS TO THE EDITOR

THE EDITOR IS NOT RESPONSIBLE FOR THE OPINIONS OF CORRESPONDENTS

UNSUITABLY-NAMED STATION

September 7

SIR, For over 100 years Manchester London Road has been a name familiar to generations of Mancunians and railwaymen everywhere, nor, during that time, has anyone seriously suggested that this title was not perfectly adequate for railway purposes.

Now, for no apparent reason, the rebuilt station is given the name "Piccadilly," although it is not a foot nearer the square of that name than was the old station, and despite confusion which is bound to be occasioned by the instinctive association of the name "Piccadilly" with London by non-Mancunians.

This change of name has never been properly publicised, as it should have been, and many people must think that the rebuilt station is part of a new underground system.

Let us hope that this unfortunate practice is not perpetuated when other large stations are rebuilt, so that Newcastle Central, for instance, is not one day re-named "Newcastle Pink Lane."

Yours faithfully,

E. E. SMITH

16, Castle Street, Warkworth,
Morpeth, Northumberland

RAILWAYS INTO ROADS

September 7

SIR, Mr. Munns tells us that there are up to 80 freight, and 45 passenger trains in one direction on the Great Central Line.

On average, a British freight train carries about 150 tons and a passenger train about 90 people. So we must move some 12,000 tons of freight and 4,050 passengers.

The passengers will need 68 buses of the 60-seater type and the freight 800 15-tonners. This comes to a total of 868 vehicles which could easily pass along a 12-ft. lane of converted railway in 12 hr., never mind 24 hr.

If Mr. Munns is wondering what we shall do with the traffic while the Great Central Line is being converted into a highway, I would point out that it will have to be diverted to the many other railways now serving much the same area and certainly all the main towns, and should they fail then existing roads will have to help out.

If all the railways had been under one management right from the start, I do not think the Great Central, the Hull & Barnsley, nor the Midland and North British lines which I mentioned in my letter of August 8, would ever have been built, even though the railways did have a monopoly of inland transport for much of the XIXth Century.

The railways in this country (and for that matter in other countries) are strangling themselves with duplication, and only when they wake up to this fact will they have the slightest hope of getting out of the morass in which they are now in. This country needs roads now: the railways are occupying land and routes which will serve the country better as roads.

Yours faithfully,

W. D. MITCHELL,
Haulage contractor

26, Tranby Avenue,
Hull Road, York

The Scrap Heap

Pullman cake

The illustration shows an ice-cream gateau specially decorated to mark the occasion of the demonstration run of the "South Wales Pullman" by the Western Region of British Railways from Swansea to Paddington on September 6. The inscription reads, Cyfarchiadau I'r Pullman Newydd Abertawe I Paddington gwasanaeth da a cyflymder, which means: Greetings to the new Pullman Swansea to Paddington good service and speed.

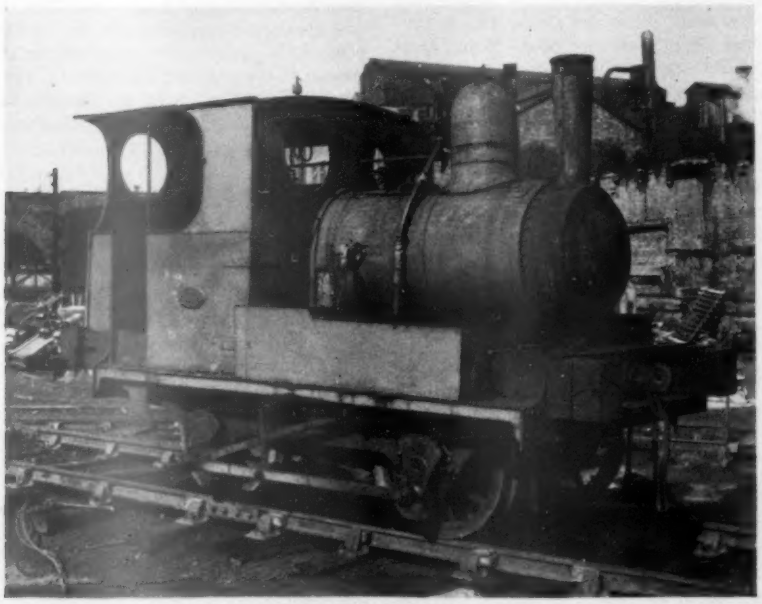
Specially decorated gateau for the "South Wales Pullman" demonstration run

Tell-tale timetable

Tewkesbury in Gloucestershire has protested against the name of the town being withdrawn from British Railways, Western Region timetables, after the passenger train service had been withdrawn on August 14. The local feeling is that many tourists get their information from railway timetables and Tewkesbury will be omitted from itineraries if it does not appear. An appeal has been made for the name of the town to appear coupled with the station at Ashchurch, two miles away.

Unwanted locomotive

An 0-4-0 engine of the twin-cylinder saturated-steam type, as illustrated, built by Kitson & Co. Ltd., Leeds, in 1887, which once worked on the Liverpool Overhead Railway and until recently, used by Rea Limited, Liverpool, to assist in the bunkering of tug boats and other small craft, has been broken up. Though the locomotive was still serviceable, it became redundant after the closure of the company's coal depot following a change to diesel-powered craft.



Twin-cylinder saturated-steam locomotive

Rolling-stock

A 19-year-old airman fell from the guard's van of a Newcastle-Kings Cross express near Huntingdon on August 28. It was travelling at 70 m.p.h. He rolled clear of the track as another express approached from the opposite direction. The train was stopped for 20 minutes while a search of the line was made. They found the airman lying between the two fast lines. He was conscious.

Pullman Car "Topaz"

"Topaz," the Pullman Car which is the subject of an editorial this week, was built by the Birmingham Railway Carriage & Wagon Co. Ltd. at Smethwick in 1913 to the order of the South Eastern & Chatham Railway Managing Committee. The car is 59 ft. 8 in. over buffers and weighs 31 tons. For service on the South Eastern & Chatham Railway it was painted crimson lake with gold linings and lettering, with black frame and bogies, and a white roof and tyres. The original side lights were wooden sashes in two pieces, the top section of which could be lifted and various positions obtained. It has been found impracticable to reproduce this feature and the car has therefore been restored to its condition of 1930/5. The interior is divided into two compartments each 13 ft. 7¾ in. x 7 ft. 11¼ in. and seating eight passengers. At the outer ends of these are two coupes, 7 ft. x 5 ft. 6 in., each designed for four passengers. Originally the chairs were almost certainly trimmed with red velour, and there was a plain cerise carpet. The blinds were dark green Pantosite, silk faced, and the interlocking tiles on the passage and vestibule ends were black and white. The car worked in this condition until at least November, 1929.

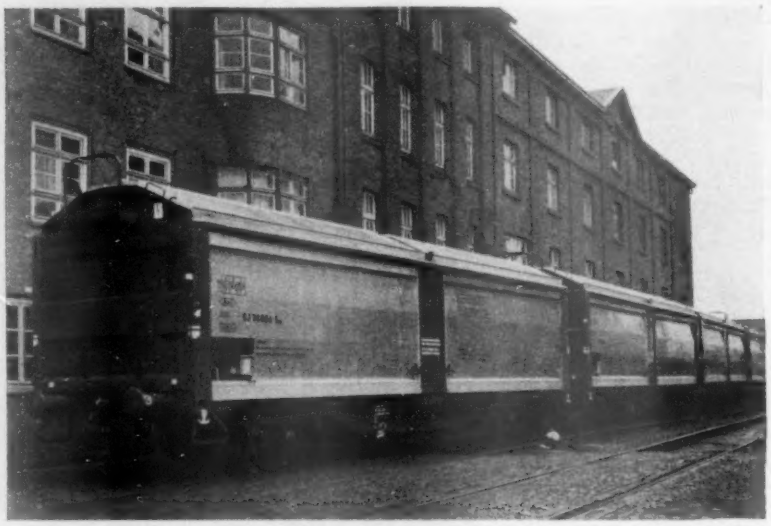
OVERSEAS RAILWAY AFFAIRS

FROM OUR CORRESPONDENTS

SWEDEN

Quick-loading wagons

Another 35 sliding-side sliding-roof wagons of the latest Seag type with reinforced welded-steel underframes and aluminium-manganese-silicon light-alloy sliding portions have been introduced on the Swedish State Railways during the last few months, following others of the original pattern. Wheelbase of the new wagons is 26 ft. 3 in., body length 41 ft., floor loading area 355 sq. ft., and capacity 3,040 cu. ft. Within this space can be loaded 60 standard pallets of 800 mm. by 1,200 mm. (33½ in. by 47¼ in.), or 21 standard containers of 1,740 mm. by 840 mm. (68½ in. by 33 in.). These wagons have been built to U.I.C. requirements to suit top speeds of 62 m.p.h., and have roller-bearing axleboxes and Knorr KE-GP air brakes.



Group of sliding-side, sliding-roof wagons for service in Sweden

ARGENTINA

Factory producing electric equipment

Siam Di Tella Electromecanica have opened a plant at San Justo, in the Province of Buenos Aires. Included in its production will be generators and other equipment for diesel-electric locomotives, motors for tramcars and underground carriages, and other types of electrical equipment.

SOUTH AFRICA

New engines and rolling-stock

During the first quarter of 1961, the South African Railways administration placed in service 23 new electric locomotives, 11 diesel-electrics, and five 2-ft.-gauge locomotives. The narrow-gauge engines were built by the Tsumeb Corporation of South West Africa. Other new stock includes 38 caboose coaches, two electric motor coaches, one electic driving trailer, and ten ordinary trailer coaches, all supplied by the Union Carriage & Wagon Company of Nigel. In addition, 25 brakevans have been received from West Germany. During this period, 974 goods vehicles of various types and eight goods brakevans were placed in traffic as well as 30 narrow-gauge wagons.

Lounge cars

A number of lounge or observation cars has been built for the Durban and Cape Town services from Johannesburg. Until now this type of car has been run only in the "Blue Train." The cars are being built in the railway's workshops.

FORMOSA

Improved passenger and tourist services

The Taiwan (Formosa) Railway administration has arranged to rehabilitate the island's passenger stock, and to purchase 30 new diesel-electric locomotives and 100 coaches, with a view to encouraging sight-seeing tours. The stock was expected to be in service by the end of August. Four forest areas are to be opened up to visitors. The rolling-stock for long-distance and tourist-favoured routes is to be air-conditioned and work on its installation has already begun.

CANADA

Co-ordinated computer operation

In the new Moncton marshalling yard of the Canadian National, the I.B.M. computer and a teletype are used, among other duties, for the automatic writing of freight car labels, giving car number, contents, consignee and destination; this label is produced simultaneously with the yard classification instructions, and is stapled to the car by hand as it passes over the hump. Though this is specially a yard machine, the C.N.R. has just completed a system-wide integrated computer system, with an I.B.M. 7070 magnetic-tape master machine at Montreal headquarters and satellite I.B.M. 1401 computers at regional headquarters at Toronto, Winnipeg, Moncton, Edmonton, and Montreal. Yard and freight offices feed information on punched cards in the regional machines, which produce the statistics required for regional operation, and then pass on information to the master machine at Montreal on magnetic tape for further analytical studies on a whole-system basis. The integrated operation of these machines is used also for freight car tracing, revenue accounting, and operational research.

ITALY

Reorganisation of the railways

On June 23, the Council of Ministers approved a series of measures designed to reorganise the Italian State Railways on economic grounds. The railways administration is to be given greater executive powers and various uneconomic lines are to be closed. Modernisation, and especially re-equipment, is to be undertaken during the next 10 years at a cost of 800 milliard lire. Of this sum, 500 milliard lire are to be spent during the next three years. To provide these funds, passenger fares were increased by 15 per cent and goods rates by 10 per cent as from July 1.

Standard-gauge line on ramped embankment to cross over approach road at Springhurst Junction on parallel broad-gauge line

MELBOURNE—ALBURY
Standard-gauge construction

An express-way to link Melbourne with Sydney and Brisbane without break of gauge

THE Melbourne-Albury standard (4-ft. 8½-in.) gauge line, to be completed by the end of 1961, is no ordinary railway. It is a 197-mile single-track, high-standard line, being built without intermediate passenger stations but with 15 passing loops, for fast through inter-state passenger and goods trains only. Its operation will not interfere with the traffic on the existing 5-ft. 3-in. gauge line and stations.

The points and signals at all of the standard-gauge passing loops will be operated from a central control office in Melbourne. To insure safety and uninterrupted fast running for this through traffic there will be a minimum of level crossings, but instead many under- and over-bridges are to be built.

Estimated cost

For this reason and because of the high standard of construction and of the numerous costly flyovers, the estimated construction cost is some £A.10,750,000. This figure covers probably 2,000,000 cu. yd. of earthworks, heavy bridging, track suitable for speeds up to 80 m.p.h., extensive remodelling at Spencer Street Station, Melbourne, the removal and building of numerous structures, as well as the provision of C.T.C.

Principal works Albury-Broadmeadows

Construction works have been roughly divided into two sections, ex-metropolitan Albury Broadmeadows, and Broadmeadows *via* Albion to Spencer Street in the suburban area.

Between Albury and Wodonga the existing 5-ft. 3-in. gauge track will be retained to cater for local traffic; only interstate passengers and freight will be carried by the 4-ft. 8½-in. gauge track. At Wodonga, one of the largest cattle-marketing centres in the Commonwealth, facilities on both gauges will be required. The previous double crossing of the broad- by the standard-gauge lines near Wodonga "B" and "A" signalboxes, respectively, was eliminated in April, 1961, by a relocation of the standard-gauge line on its final alignment.

Between Wodonga and Chiltern extensive diversion of the Hume Highway—the trunk route more or less paralleling the Albury-Melbourne railway—some 12 miles in length, was carried out by the Country Roads Board, to eliminate four crossings of the railway. Of the £A.337,000 cost the Victorian Railways share is £A.53,250.

Major bridges constructed

Two similar major bridges have been duplicated before reaching Wangaratta. They are the Reedy Creek bridge 546 ft. in length, and the Ovens River bridge, consisting of two 63-ft. and 14 42-ft. spans. In both these bridges the superstructures are of steel carried on concrete piers founded on concrete piles.

At Wangaratta, the largest town in North Eastern Victoria, three level crossings have been eliminated and heavy road traffic around and approaching the busy station has been diverted by depressing the new standard-gauge

line 18 ft. below ground level. This was achieved by excavating a 2,800-ft. walled cutting to the east of the broad-gauge station; it involved the removal of 55,000 cu. ft. of soil and the use of 6,500 cu. yd. of concrete. Special steel shuttering, costing £A.3,100, on rollers has facilitated concreting, the form-work being moved rapidly from section to section. The road traffic is carried across the line at ground level on overbridges; an overbridge has also replaced another level crossing in the town.

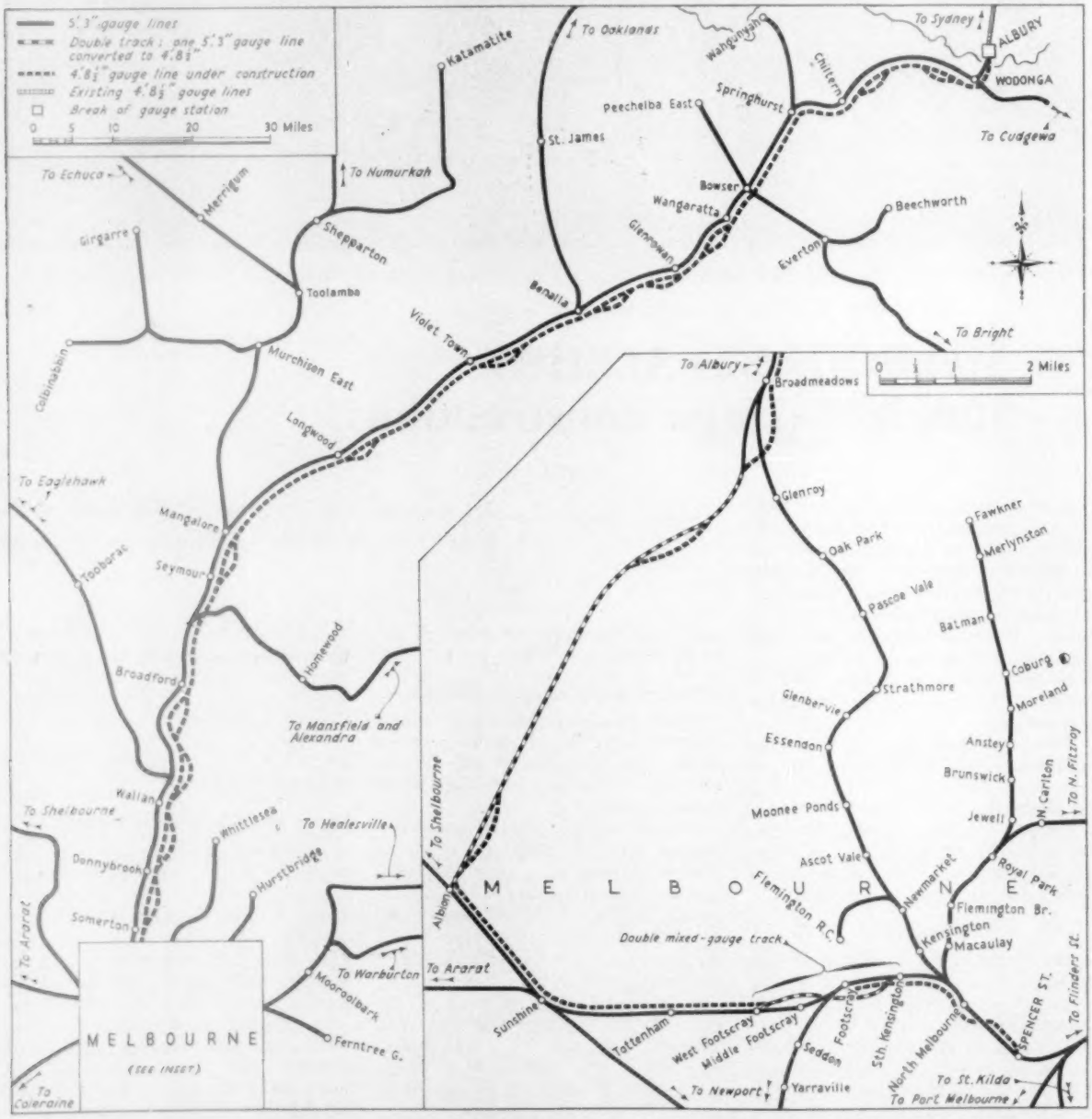
The line crosses a minor summit with 1 in 75 gradients on each side of it at Glenrowan. This has entailed the location of the crossing loop opposite the broad-gauge station at the summit, and the replacement of a level crossing by an 81-ft. overbridge at a cost of £A.45,000. There is some heavy earthwork being carried out in this area.

Benalla-Heathcote Junction

Beyond Benalla, Broken River is crossed by the line on a bridge similar in design to those just described. It consists of two 63-ft. and 16 42-ft. openings. At Seymour, another important centre, numerous works are, or have been, in hand; such as the extension of an underbridge, rebuilding of a signalbox, cutting back of several bays of the roundhouse, and the provision of standard-gauge locomotive facilities; these were required for housing and turning assistant engines for the 1 in 50 gradients beyond Seymour. Even with this gradient heavy earthworks have been necessary between Tallarook and Broadford. Near the latter town the Hume Highway has required a new overbridge, and between Kilmore East and Wandong realignment and regrading, as compared with the broad-gauge, have been completed.

Heathcote summit and Somerton industries

At Heathcote Junction the summit of the route is reached, the altitude is 1,145 ft. The approaches on both sides are again 1 in 50. A 34-ft. cutting and a signalbox were required here. The Hume Highway was crossed once more at



Map showing Melbourne-Albury standard-gauge line under construction, inset shows work in the Melbourne suburban area

Craigeburn, a level crossing being replaced at a cost of £A.266,000.

A small standard-gauge marshalling yard is being built to cater for the growing industrial area round Somerton. Standard- (as well as broad-) gauge sidings will serve the Ford and Clyde Industries works. This is the sole intermediate goods traffic centre between Melbourne and Wodonga served by the standard-gauge line. Three miles south of Somerton is Broadmeadows, where the Melbourne electrified suburban area is entered.

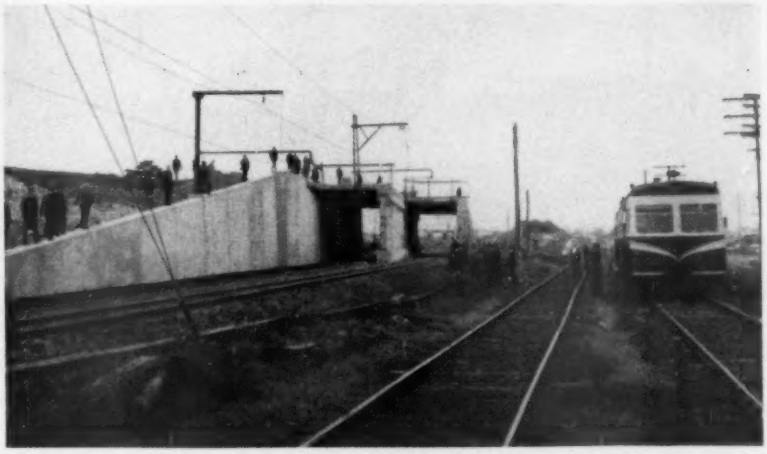
Instead of continuing beside—and generally to the south-east of the existing broad-gauge main line as it has all the way from Albury—the standard-gauge diverges from it just beyond Broadmeadows. Rising on a ramped approach embankment it crosses the broad-gauge tracks on a flyover at Jacana, and making a long detour *via* Albion enters Melbourne from the west.

Jacana flyover

One of the most interesting works in hand is the Jacana flyover to carry standard-gauge trains over the broad-gauge Albury-Melbourne line. The latter is double, but requires a crossing on the square of only 30-ft. width. So acute is the skew that the total length of the R.C.-box openings of the flyover is 176 ft. For its construction, the broad-gauge main tracks were temporarily diverted westwards, enabling the concrete retaining walls and box openings to be built in the open. Only the ramped approach embankments now remain to be completed here.

½-mile long walled cutting

The standard-gauge line descends from the flyover to meet the existing 5-ft. 3-in. gauge double-line Broadmeadows-Albion goods tracks, diverging westwards from the main line. From this point the existing Up goods road is being converted to 4-ft. 8½-in. gauge, becoming the main passenger and goods line of that gauge into Albion, about 8½ miles distant. The Down goods line will remain 5-ft. 3-in. gauge but will be converted to a both-ways single line. On this section of the route, two deep valleys of the Moonee Ponds Creek and Maribyrnong River are crossed on lofty steel ballasted deck viaducts; the one over the latter is 180 ft. high and the largest on the Victorian Railway system.



The Jacana flyover under construction with revetted embankment on left to take standard-gauge line

At Albion, the goods lines swing round to join the double line carrying suburban traffic from St. Albans *via* Sunshine into Melbourne, and also the main-line traffic from Bendigo and Northern Victoria. In future the Up goods line, now being converted to the main standard-gauge line, instead of joining the line from St. Albans, will run parallel and on the north side of it to West Footscray, as the St. Albans line is already very busy.

Developments in Albion

Construction of a road overbridge to carry the four-lane Western Highway over the railway at Albion has begun and it is expected to be in limited use towards the end of the year. Last October the existing interlocked-gate level crossing was replaced by a temporary nearby crossing equipped with boom barriers and flashing lights. These will be removed when the overbridge is completed, at an estimated cost of £A.546,000. At Albion Station the Up platform is to be demolished to make way for the standard-gauge track, and the Down platform is now being converted into an island. Work has also begun on a subway to the island platform. Eventually the signalbox at Albion will be removed and all signalling controlled from Sunshine.

Though all other crossing loops on the standard-gauge line will be 2,900 ft. in length, that at Albion will be 1,500 ft. as it is designed for crossing passenger trains only.

A six-span overbridge on a 54-deg. skew at Sunshine, to eliminate the Hampshire Road level crossing, is well under way, and the girders have been placed in position on the piers. It will cross the five-track broad-gauge line and the present station which is being re-designed to provide the necessary room. A passenger subway has been completed. At Tottenham, on the Melbourne side of Sunshine, there is an extensive marshalling yard, to which some alterations have been made to allow the standard-gauge line to pass along its northern side. These works included the construction of a retaining wall and abutments for an underline bridge to carry the new track over Ashley Street, Tottenham.

At the east end of the marshalling yard is West Footscray Junction, and there the now double-line standard-gauge tracks merge with the broad-gauge as three-rail mixed-gauge roads. The reason for this is that otherwise a new tunnel would have had to be constructed under Footscray Station, on the Melbourne-Geelong and Melbourne-Bendigo lines. The mixed-gauge lines pass through the existing 1,357-ft. Bunbury Street tunnel under that station after approaching it in deep cutting.

The mixed gauge continues to South Dynon Junction where the standard-gauge becomes independent, passing between a new mixed-gauge diesel-locomotive depot and the standard-gauge carriage shed on its south side, and the standard-gauge goods shed and yard on its north. The new carriage shed is 1,200-ft. long enclosing two tracks, and is equipped for all servicing.

Diesel-maintenance depot

This diesel-maintenance depot will replace the existing broad-gauge locomotive depot at North Melbourne, built about 1890. The new shed now under construction will be 453-ft. long x 328-ft. wide and will enclose nine broad-gauge and two standard-gauge servicing tracks.

Typical level-crossing replacement by an overbridge at Craigeburn

Its equipment will include one 25-ton and two 60-ton cranes. The outside walls will be in precast-concrete panels to a height of 16 ft. 6 in., above which they will be in corrugated asbestos cement. Adjacent will be mechanical and electrical shops and stores, a four-storey block of offices, amenities, and equipment.

The line crosses Moonee Ponds Creek on a steel and concrete bridge 210-ft. long, and converges towards North Melbourne Station, passed on the north-east side of the line. Joined by an engine road from the locomotive depot, the two lines ascend an incline side by side approaching the 575-ft. flyover spanning, on a considerable skew, no fewer than 20 broad-gauge tracks approaching Spencer Street, including the main lines from Albury and six suburban-electric roads. The abutments of the double-line flyover and its 13 piers are of concrete, and support R.S. beams 36-in. deep each weighing 6½ tons specially imported from the United Kingdom. The decking is of trough-shaped R.C. slabs; there are 440 tons of steelwork and 11,000 cu. yd. of concrete in this flyover. The two tracks descend from it to enter Spencer Street Station on its north-east side and parallel to the existing broad-gauge lines.

Track culverts and services

The 4-ft. 8½-in. gauge line is being laid with 94-lb. rails on hardwood sleepers. The large number of culverts being constructed vary from 2-ft. pipes to 11-ft. concrete boxes. There will be 15 crossing loops as shown on the map, each 2,900-ft. long. Automatic block signalling is being installed throughout, and all points and signals will be operated by Westronic C.T.C. from Melbourne.

All passenger trains will run non-stop between Albury and Melbourne, 197½ miles *via* Albion. Public goods traffic is scheduled to start on January 2, 1962, and passenger traffic when the signalling system has been completed about March or April, 1962. There are expected to be three passenger and seven goods trains each way daily when the line is opened.

C.T.C.

The movement of trains except quite near Melbourne will be entirely regulated by the controller in Melbourne, who will have a complete picture before him on an illuminated diagram. He will operate all the points and signals by sending out control codes on a single pair of wires; these wires will also act as repeaters carrying indications back to the controller telling him what movements have actually been made. Interlocking between signals and points and conflicting signals will be carried out by lineside relays, and track circuits will prevent conflicting indications.

At the 14 stations where there are diamonds carrying 5-ft. 3-in. gauge traffic across the 4-ft. 8½-in. line the latter will be the superior track and local broad-gauge signalmen will be unable to set up the broad-gauge road without obtaining a release from the C.T. Controller.

Installation of automatic colour-light signalling by McKenzie & Holland (Aust.) Pty., Ltd., is at present being concentrated on the sections south from Wodonga to Seymour to enable use of ordinary automatic single-line AP block signalling to be ready for operation on a local point-to-point basis between Wodonga-Wangaratta-Benalla-Seymour for the expected commencement of through freight working from January 2, 1962.

South of Seymour, pending completion of further automatic signalling, it is now planned to install temporarily, miniature electric-staff block system, if necessary with automatic staff exchanging, to permit train operation with minimum delay pending completion of the signalling contract and changeover to the C.T.C. panel at Spencer Street, Melbourne. The latter will control only between West Footscray Junction and Wodonga (187½ miles).

Melbourne terminal area signalling

Local signalling control in the Melbourne terminal area and approaches, will be from new relay interlockings with miniature control switches (similar to telephone keys) in the existing signal-boxes at Spencer Street No. 1 Box and South Kensington Box, covering the Dynon area.

For the time being, at least, operation between Wodonga and Albury South Box will be with the existing miniature electric-staff block system, without ground exchangers, and with Wodonga Coal Sidings Box as an intermediate switching-out crossing place, normally used for freight trains only.

At a later date the C.T.C. operation may be extended to Wodonga Coal Sidings, if not right into Albury, but there are complications to be overcome before this is possible.

All running signals will be single lens "searchlight" type with 8-in. lenses, and the lower ("marker") lights will also have lenses of the same size.

Typical formation ready for standard-gauge line

Standard V.R. "speed" signalling aspects—similar to United States A.A.R.—will be employed with local modifications to meet special circumstances.

REHABILITATION OF HEDJAZ RAILWAY

On June 6, a contract was concluded to the value of £.Syr. 2 million with Becker G.m.b.H. of Munich as consultants and supervisors for the rehabilitation of a 523-mile length of the 711-mile Hedjaz Railway. The reconstruction work is expected to take two years to complete.

MAIN-LINE SALOON COACHES for South African Railways

Special design features include measures against corrosion and use of melamine for interiors

THE first 190 third class main-line saloon coaches designed and built by the Union Carriage & Wagon Co. Ltd., of Nigel in the Transvaal, went in service on South African Railways during June, 1961.

These form part of an order placed during 1959, the balance of the order comprising 112 first class saloon coaches and 20 first/second class composite coaches.

All coaches are of the day-and-night type and have the same contour and structural features, with the exteriors finish-painted in the new S.A.R. colour-scheme of gulf red and French grey.

Principal dimensions are as follow:—

Particulars	ft. in.
Length over vestibule ends	65 5½
" " bogie centres	47 6
Max. width over body panels	9 4
Max. height from rail...	13 0

General body construction is based on the integral tubular anti-telescopic principle. This considers the whole bodyshell as a rectangular tube stiffened at intervals along its length by lateral rings formed by transoms, pillars, and carlines. These lateral rings are positioned by continuous longitudinal stiffening members comprising solebars, cantrails, bodyside rails, and purlins.

200-ton loading test

All these members are welded at the joints with other members, and also to the outer skin, the whole forming the self-supporting and load-carrying bodyshell designed to carry the maximum payload and also to meet a longitudinal compression 200-ton loading test called for in the specification.

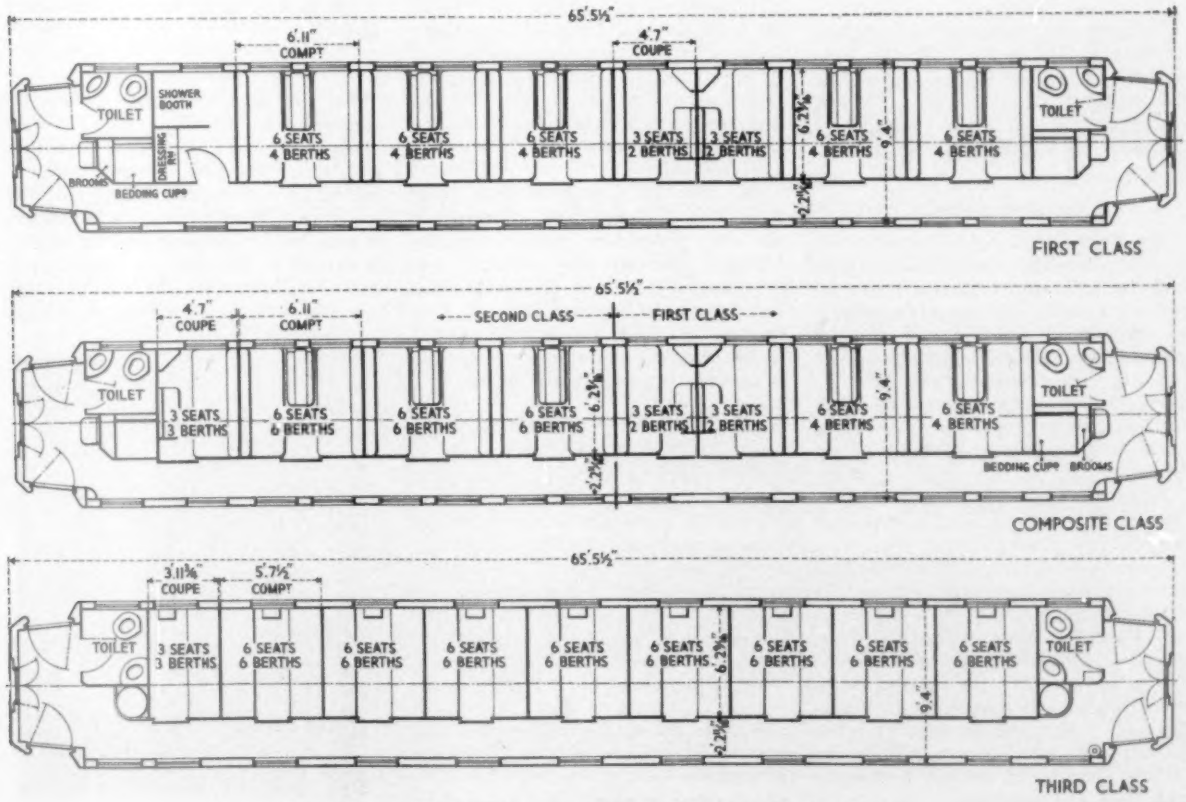
All structural members are of "Corten" steel, one of the properties of which is excellent comparative corrosion-resistance.

The underframes are fabricated from cold-formed or pressed sections for the solebars ($\frac{5}{16}$ in.), bolsters ($\frac{1}{2}$ in.), transoms ($\frac{1}{8}$ in.), and a sub-floor consisting of 14 s.w.g. longitudinally-corrugated panels butted and welded to each face of the latter and to the solebars.

Conventional centre longitudinals are not used. A subsidiary bolster has been added immediately at the rear of the drawgear pocket and between the normal centre-plate bolster and headstock to spread buffing loads and distribute these across the width, through the solebars, transoms and sub-floor panels.

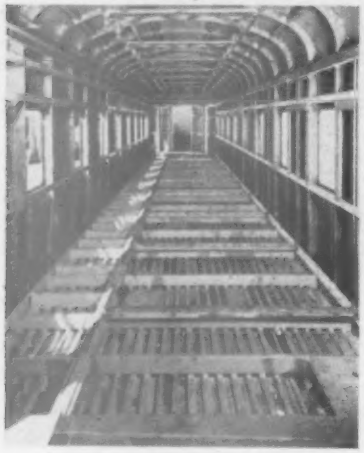
Headstocks are fabricated from rolled steel plates of $\frac{1}{2}$ in., $\frac{3}{8}$ in., and $\frac{5}{16}$ in. thickness. A large anti-telescoping casting is secured to each headstock in the centre to overcome any tendency to override adjacent cars in the event of a collision.

The bodysides are built up from cold formed and pressed sections which make up the principal framing members to



Plans of first, first/second composite, and third class main-line coaches

which 12-s.w.g. panels are intermittently plug-welded. Body pillars and cantrails are 10 s.w.g., and longitudinal rails are 14 s.w.g. All framing members both vertical and horizontal are continuous, and body pillars are notched to pass the longitudinal rails. The panels are blanked and formed for window openings and are "Peco-foil" automatically-welded before being plug-welded to the framing. Box sections of 14 s.w.g. are used for the light rails and waist rails and channel sections for the pillars.



Main-line day and night coaches, shell interior construction

The principle of the roof construction is similar to that of the body-side; carlines are of channel section and purlins and cantrails are Z-section. Welding throughout the roof is used except where the gutter is attached to the roof by riveting.

Corrosion problem

The problem of corrosion was very carefully considered throughout all stages of design to minimise conditions favourable to corrosion. The corrosion problem was considered together with thermal insulation and sound-deadening aspects and the manufacturer was able to draw on extensive experience with coaches designed for other parts of the world where comparable climatic conditions obtain.

After erection, bodyshells are grit-blasted inside and out, and a vinyl wash followed by zinc-chromate primers is applied. Next comes a ½-in. thick interior application of "Autokote," which combines excellent anti-corrosion properties with those of sound-deadening. Thermal protection and noise reduction is achieved by the use of 2-in. thickness of fibreglass thermal insulating material, manufactured locally and supplied in resin-bonded pads, and fixed by adhesives and Nelson studs to the interior bodysides, ends, roof, and underfloor.

The use of fibreglass is a comparatively recent breakaway from tradition as far as South African railways are concerned, but it was felt that because of the particular problems of corrosion in South African climates, easy removal of the thermal insulation was essential to facilitate complete examination of structural parts.

Use of timber minimised

In keeping with the most modern railway passenger coach-building practices, the use of timber has been reduced to a minimum, for not only does timber add unnecessarily to the weight and cost, but has frequently been proved to be a source of corrosion.

Local materials have been used almost exclusively in interior partitions, body-side panels, and ceilings. The partitions which divide up the compartments and corridor are constructed of African mahogany framing to which is applied, by a special veneering process, a facing of Panelyte backed with Masonite, both of which are locally produced.

Interior décor

Body-side panels are constructed of Panelyte facing laminated to Masonite with a compensating balancing veneer of Panelyte on the back. Ceilings are manufactured from Swedish hardboard to which is veneered a rigid p.v.c. bearing a lightly embossed pattern.

The colour-scheme for the third class coaches is in "copper-tone" below the waist rail and "yellow stippletone" above with an aluminium-bead division strip. Ceilings are white, following the traditional colours used by South African Railways for third class coaches. Colour schemes for the other classes have not been finalised.

The use of melamine-faced panel constitutes a considerable improvement on the previously painted interior coaches, allowing easy cleaning and providing a hard and durable surface. The techniques for the production of these panels have been learned from a British company specialising in this work, in association with a local company.

Plastic floor covering

The floors are of ⅞-in. thickness marine quality waterproof plywood laid in single, full-coverage panels. These can be removed for inspection and maintenance purposes without disturbing the partitions. The floor covering is of "Polyflor" laid in sheet form and coved 1 in. up walls and partitions to prevent ingress of moisture. Special techniques are employed in the laying of this vinyl material, including the "welding" of all joints.

Seating and berth arrangements follow the conventional S.A.R. pattern and are as follow:—

First class full compartment		Seat 6, sleep 4
2nd class	,, ,,	Seat 6, sleep 6
3rd class	,, ,,	Seat 6, sleep 6

In the first class stock, the seat-back folds down to provide a wide "Dunlopillo"-covered spring mattress for the lower berth and the upper berth folds down from its "day" position in the compartment wall. In the second class, the seat-back folds up to form the middle berth and the upper berth arrangement is similar to that of the first class. The third class lower and middle berths are arranged in a manner similar to those of the second class, with the upper berth as a fixed position. All seats are trimmed with p.v.c. material.

New window unit

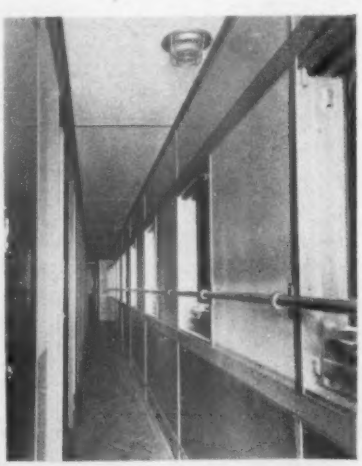
Side doors and end communicating doors are of cast aluminium alloy fitted with fixed glazed glass windows. Kaye double-action safety locks are fitted to the side doors.

A completely new window unit with aluminium-louvre shutter in place of the conventional wooden shutter was designed for these coaches. The "split" windows are of the full-drop, balanced type manufactured from locally-produced anodised aluminium sections. The glazed frame is constantly balanced by "Hera" patented balance gear, the only imported item in the entire window unit construction. Besides presenting a very pleasing appearance, the self-colour anodised window units are easily kept clean and will ensure long maintenance-free life.

All glazing is in Armourplate safety glass.

Generating equipment

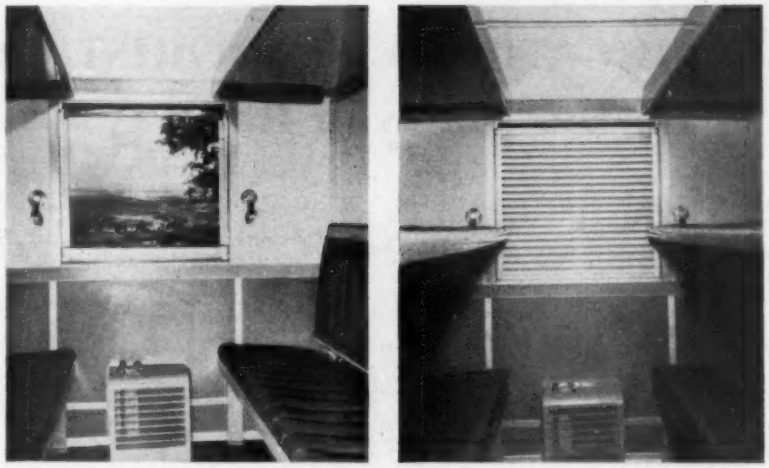
For the third class cars, 2-kW. d.c. generators are provided and 2·75-kW. generators are fitted to 62 of the first class cars. These d.c. dynamos are controlled by carbon-pile regulators of the dual type. These ensure that full output is available for charging until the battery is charged to an extent that such a high rate is no longer useful. At this stage, control is maintained at constant voltage



Third class main-line coach, corridor

and the charge current is tapped down to the requirements called for by the battery condition.

For 50 of the first class cars, electric power will be provided from 2·75-kW. inductor alternators with magnetic amplifier control. The rectification of the a.c. for battery-charging and lighting is achieved with semi-conductor rectifiers of the silicon type. The machines, both a.c. and d.c., are mounted on the bogie headstock and driven by three C-section vee-belts from an axle pulley. Belt tension is maintained by a spring mounted between a bracket on the bogie headstock and a bracket on the machine. The anchor point on the machine is arranged so that, with increased belt length resulting from stretch, approximately constant belt tension is maintained.



Third class main-line coach. Left: daytime arrangement. Right: sleeping arrangement

Lighting

The third class cars are equipped with incandescent lighting, the fitting being circular with a visible metalwork finished silver olasto enamel. In the first class cars and first/second composite cars, fluorescent lighting is to be provided in all fittings including the destination and numeral indicators.

In the first class sections, fluorescent berth lights will be provided. The fluorescent fittings are finished in chromium plate and have plain pale opal Perspex panels, which panels cannot be removed without unlocking the fitting. The lamps are arranged to operate directly from the coach electrical supply. This varies from the nominal 110-V. standing voltage of the battery to 135-V. being the full charging voltage of the battery without a lamp voltage regulator. This is achieved by the use of suitable ballasts and a relay which cuts the lamp starter out of circuit once the lamp is struck. The fluorescent lamps are of the hot cathode type, 24-in x 1½-in. tubes being used in the compartments and 18-in. x 1½-in. tubes being used in the corridors, vestibules, toilets, and steplights. In the fluorescent berth lights, 9-in. U-tubes are employed.

Electric indicators

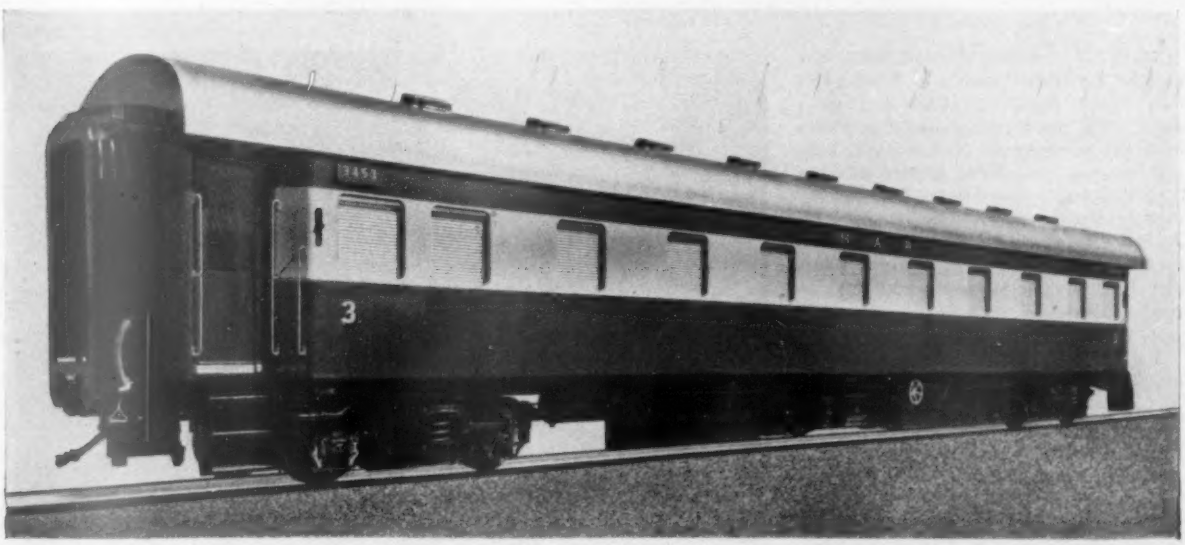
" Toilet engaged " indicators will be provided at each end of the corridors of the first and second class cars, the controlling switch being activated by the bolt of the toilet door. In the first class and first/second class cars, electric shaver sockets will be provided in each compartment. Supplies of 115 V. or 230 V. a.c. are available from the socket through a double-wound transformer, a switch being available to select the required output voltage. The supply to the transformer is from a rotary converter mounted on the coach underframe which starts when a plug is inserted in the shaving socket.

Two motor pumps are provided on each car to raise water from the underframe tanks to the overhead service tanks.

For all coaches, " Monsoon " extractor ventilators, manufactured in South Africa, are fitted. These are static ventilators mounted on the roof of the carriages and depend for their operation on a flow of air passing over the ventilator. The extraction rate of the ventilator is satisfactorily maintained irrespective of the direction of the air-flow.

Bogies

The bogies are of " Commonwealth " mono-bloc cast-steel frame type with all holes for location pins bushed and pedestals (horns) lined with spring steel. Other features of the bogies are snubbed coil spring suspension, outside swing hangers, large centre-plate bearing, side-stops, and anti-slew device.



Third class main-line coach

ORGANISED TERRORIST ACTIVITY on the Malayan Railway

An account of the attacks made during the 1948-60 emergency in Malaya and the measures taken to meet them

by H. J. IRON, A.M.I.Mech.E., A.M.I.Loco.E., M.Inst.Brit.Found., A.F.Inst.Pet., *former Locomotive Running Superintendent, Malayan Railway*

A STATE of emergency was declared in the Federation of Malaya on June 16, 1948 as a result of the presence of organised, Communist terrorists and their attacks on civilians and property. Attacks on the railway during the ensuing 10 years are summarised in the table below.

Principal events	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	Total
Track and bridge sabotage ...	12	21	150	116	68	19	17	21	18	1	441
Trains derailed	5	7	58	81	35	4	3	2	2	—	197
Trains fired on	6	5	58	56	44	2	—	3	1	—	171
Stations destroyed	4	2	2	2	3	—	—	—	—	—	18
Passengers killed	—	2	10	18	5	—	—	1	—	—	36*
Passengers injured	—	7	59	63	29	—	—	3	—	—	161*
Railway staff killed	1	4	6	2	5	—	—	—	—	—	18
Railway staff injured	5	23	63	27	24	—	1	2	4	—	149
Telecommunications and signals damaged	16	21	150‡	150‡	67	51	31	20	69	5	580‡
Coaches destroyed	—	4	2	9	3	—	—	—	—	—	18
Wagons destroyed	—	—	—	9	7	—	—	7	3	—	26
Locomotives seriously damaged ...	2	5	26	25	16	1	1	1	1	—	78
Coaches seriously damaged ...	—	2	5	19	5	—	—	—	—	—	31
Wagons seriously damaged ...	—	3	2	41	86†	7	3	7	7	—	156

*Security forces personnel not included.
† Some carried over from 1951, because of delay in picking up from lineside.
‡ Approximate numbers only.
Most of the incidents in 1952 were in the first half of that year.
There were no attacks from 1958 to 1960.
The total number of incidents was 1,432.

After the Japanese defeat, the railway was in a very poor condition. About 75 per cent of its rolling-stock was unserviceable, track was safe only at slow speeds; bridges, workshops, and installations had been badly bombed, and the majority of track on the East Coast Line had been removed.

Rehabilitation began on this metre-gauge, single-line railway, formerly one of the finest in the Far East. By 1948, the work was largely complete and the railway again on its feet.

Pilots provided

From June 8, 1948, it became necessary to pilot night-mail trains in South Johore by permanent-way jeeps, and similar patrols were introduced in Perak later the same week. Besides carrying railway personnel, these jeeps conveyed an armed police escort and a linesman in case of interference with telephone wires. At first, the patrols ran one section ahead of their trains, but by July trains were run in the same section under special regulations, with reduced speeds, and with a 5-min. headway.

By the end of July there had been two attacks on the jeep pilots from small-arms fire and one attack on a wayside station. Because the jeeps could not be readily armoured, they were discarded and replaced by trains comprising locomotive and wagon on which was mounted a steel turret. Manufactured in the railway workshops, this was of ½-in. steel plate, 6 ft. 10 in. x 9 ft. in diameter, equipped with firing slots and a swivel searchlight on the roof. The searchlight normally pointed rearward to indicate the position of the pilot train to the driver of the following train. The pilot driver was equipped with a Verey pistol to fire if he were stopped by an obstruction and a portable telephone which could be connected to phone wires along the line to provide contact with a control office.

Various security measures were put in effect. Vulnerable points were listed and some received armed protection; certain areas were declared as protected places in which unauthorised persons could be arrested or fired on; security committees were formed; ½-in. steel plate was added to cab sides and fronts of locomotives and glass side windows were replaced by steel shutters; the number of night trains was reduced and trains were run in convoy; two bogie wagons were placed between the engine and coaches of night mails to lessen the danger to passengers in the event of a derailment, and senior district officers were issued with small arms.

Engineer ambushed

In September, 1948, a European civil engineer was ambushed in a rail jeep in Perak while on inspection. Although he and his chief inspector escaped with serious injuries, his driver was killed. District inspections in jeeps were thereafter discontinued.

During October, track was damaged by explosives; tools were stolen; phone wires were cut, and trains fired on, derailments were attempted and achieved, and an attempt was made to burn a station.

Attacks developed into the following standard methods:—

(i) Track sabotage, usually at night in the path of a train, and carried out by explosives, electrical devices, removal of

Pilot and Kuala Lumpur-Penang night mail derailed by removal of fishplates

fishplates and dog-spikes, complete rail removal, and obstructions across the track.

(ii) Small-arms fire at passing trains from prepared positions.

(iii) Arson by gangs at lightly-protected stations and staff quarters.

(iv) Destruction of communications and ambush of repair parties.

The task of dealing with the bandits who numbered about 5,000 was complicated by the terrain—generally thick jungle in which trails are quickly lost—and a high humidity which made tracking by dogs difficult. Constant patrols and chasing after each incident with, later, denial of food and resettlement of villages, became the standard method of retaliation.

Armed personnel carried

To minimise the effect of sabotage to track, trains were developed into fighting machines. Two wagons instead of one were propelled: the leading wagon was equipped with a low barricade sheltering three armed personnel who scanned the track for signs of interference. Whitewashed fishplates and spikes helped quick and early detection.

After experiment, a system was devised to give the driver a quick warning when the leading wagon derailed. A system of plungers, one between each pair of wagon bogie wheels, pushed up on contact with the rail and broke a glass chamber which was connected with the automatic vacuum brake.

A shortage of motive power developed: derailment usually occurred at sites chosen at tops of embankments or near bridges and many locomotives were badly damaged because of this.

Locomotives also had to be provided for armoured trains carrying military and police forces. These trains comprised crash wagons, turret wagons and Fox armoured cars on flat wagons and a locomotive. This was placed centrally.

Armoured vehicles

In 1951, 12 Wickham trolley chassis were acquired and armour-plated in the railway workshops. The light weight of these vehicles offered advantages from the point of view of re-railing after sabotage, and, in 1952, an order was placed for a further 42 of these trolleys, suitably armoured. Described and illustrated in the November, 1953 issue of *Diesel Railway Traction*, these trolleys were manufactured to a design developed to the requirements of the police and military authorities. On arrival in 1953, they took over all piloting duties, the extra trolleys being posted at strategic stations. On patrol, they normally operated in pairs so that, if one became derailed, the other could give immediate supporting fire.

Although arriving after the majority of the attacks had ceased, the trolleys gave good service and released much-needed locomotives for train operation; reduced operating costs, and minimised the difficulties of derailments. When derailed, on an embankment, they would roll. Personnel inside usually escaped with bruises and were still able to keep attackers at bay until reinforcements arrived.

Map showing Malayan railway system

Special wagons developed

The trolleys could be picked up by a minor breakdown crane and special wagons were developed to return them to the railway works if they became unrailworthy. Police personnel were instructed in their control, and this gave railway drivers some relief from the continuous nervous strain of imminent derailment under which they had lived for six years, though there remained an element of risk for normal trains.

To repel small-arms fire, armed escorts on trains were organised. All armed forces when travelling came under the control of an O.C. Train, who was provided by the military and undertook armed defence. A medical orderly was also included in the complement of the train. Blackouts were considered but not adopted because of the high temperatures experienced, the possibilities of panic, the difficulty of dealing with casualties, and the fact that the engine headlight gave a clear indication of its position, but dim-outs were adopted through known bad areas. In some cases, drivers put out their headlights for short distances, although this was not part of normal drill and held the risk of detailment through unseen obstructions.

Additional fire power

Additional firing power was given to trains in 1950 with the attachment of Fox armoured cars and, in some cases, a

Gurkha party. If a Gurkha train was attacked, the guard would stop it by the automatic vacuum brake, the Gurkhas would drop off to fight their battle, and the train would proceed on its journey.

By the end of 1950 attacks had become so frequent that it was decided to withdraw night passenger trains altogether for the time being. Goods trains continued to run at night; the remainder of the traffic was accommodated in day trains.

In an attempt to prevent the destruction of stations, prefabricated-concrete structures were developed and armed guards were increased and moved to known areas of activity. Security fencing was installed with perimeter floodlights turned outward, and alarm bells connected railway stations with police stations. Some isolated stations suffered regular sniping, and sandbags were provided as protection for offices and quarters.

Little could be done to prevent the cutting of telephone wires—a form of sabotage which continued after other methods ceased. Repair was accelerated by making spares readily available and by the use of the Reid fault-locator to pinpoint breaks. Major communications were safeguarded by the installation of a v.h.f. trunk system connecting all main towns, and this replaced land trunk lines, greatly nullifying the effects of sabotage in this direction.

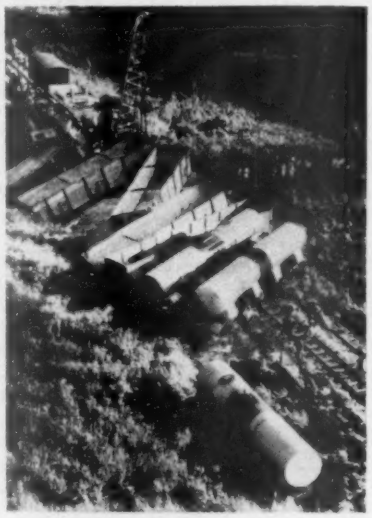
Wireless communication

By October, 1948, wireless communication had been installed in guards vans of mail trains. Operated by police personnel, these provided constant communication with main towns. The Verey pistol remained the medium of communication between the drivers of the pilot train and of its charge until November, 1948, when both drivers and the train guard were equipped with walkie-talkie sets. Not suitable for use while the trains were in motion because of their limited range and the interference from train dynamos, these sets could be used when trains had stopped and were so used in these instances by the pilot driver to advise the driver of the following train as to the cause of a derailment. This practice was not entirely satisfactory, as cases occurred in which a following train ran into the derailed locomotive in front, as in the case when the mail driver mistook the cloud of steam rising from the derailed engine for a mist patch, a common condition on night runs.

The system finally established made use of a transmitter on the pilot locomotive. This operated continuously when running above a speed of 4 m.p.h. and gave a red or green signal in the following locomotive and leading guard's van. Should the pilot stop out of course or be derailed and the pilot driver not operate a cancelling plunger, a red light would show in the following cab and the driver would brake in accordance. The technical details of this system were described in *The Railway Gazette* of March 26, 1954.

Through running in 1953

Despite attacks, the replacement of the East Coast line proceeded. Although work had to be stopped at the southern end in October, 1948, it was continued from the North. Through running was finally established in 1953, up to which time freight trains to Kelantan had to be worked from Prai via Thai railway routes.



Ipoh-Tapah Road goods train derailed by explosives

Breakdown crews working at night under lights naturally attracted attention from snipers. A serious attack occurred in September, 1949, during work on a derailed armoured train on the East Coast Line. This derailment had resulted from the removal of fishplates and dog-spikes and had involved the capsizing of five wagons and the locomotive. The wagons were picked up and the track slewed past the engine to permit the passage of trains on the same day, but the locomotive had to be left until a large crane arrived from Gemas.

On arrival, the Gemas crane and crew, accompanied by the European District Locomotive Superintendent and Locomotive Shed Foreman, took their train into Kuala Krau Station for the night. At 4.40 a.m. the next morning, about 300 bandits attacked the small town, captured it, the station and the breakdown train, killed the two Europeans, four policemen, and some civilians, and destroyed railway buildings, coaches, and damaged the crane and other vehicles. An armoured train came to the rescue only to be derailed on its approach, the line having been sabotaged on both sides of the station. Reinforcements came in at 8 a.m., when the bandits withdrew with a loss of eight dead.

Supplementary air service

In 1951, the Government introduced a supplementary air service, operating five-seater De Havilland "Beaver" aircraft between outlying landing strips and main centres and connecting with existing internal airways. This service was run by the railway from July, 1954, until it was absorbed by Malayan Airways Limited in 1958.

The cost of the damage done to railway property during the attacks has been estimated at $4\frac{1}{4}$ million (or £500,000). About $1 million of this amount was debited to the Railway Renewals Fund for near life-expired assets. The preventive measures taken, including the running of pilot trains, have been estimated to have cost $10\frac{1}{2}$ million (or £1$\frac{1}{4}$ million), but it is not possible to estimate the loss of revenue resulting from line-blocks, inavailability of rolling-stock, and other causes.

Acknowledgements

A special tribute is due to the train crews and outside operating and maintenance staff, who steadfastly managed to keep the railway running under the most difficult and nerve-racking conditions, and thereby assisted in the final termination of the emergency.

The assistance of railway officials, and the permission of the railway's General Manager, to publish this report, is gratefully acknowledged by the author.

DEVELOPMENT ON CENTRAL RAILWAY OF INDIA

During the Third Five-year Plan period the Central Railway of India is to undertake several most important works. These include the continuation of electrification on the Bombay–Igatpuri line, for a further 190 miles to Bhusaval, at an estimated cost of £9 million. This is over the combined double-track main trunk routes from Bombay to (1) Delhi and northern India and to Calcutta via Jubbulpore, and (2) to Calcutta via Nagpur, routes (1) and (2) bifurcating at Bhusaval. Also, two sections of the Jubbulpore route, Itarsi–Jubbulpore about 152 miles, and Jubbulpore–Katni, some 56 miles, will be doubled. A fourth project contemplated is the construction of the Diva–Panvel–Uran line.

PERSONAL

British Railways

MR. C. R. BENNETT, Assistant (Modernisation), Euston, British Railways, London Midland Region, who, as recorded in our August 18 issue, has been appointed Movement Superintendent, Line Traffic Manager's Office, Manchester, was educated at Palmers School, Grays, and entered the service of the London Midland & Scottish Railway as a junior clerk at Tilbury Dock station in 1923. After a number of years' experience at passenger and goods stations, he moved to the London District Passenger Manager's Office and, in 1932, to the Chief Operating Manager's Office at Euston. Mr. Bennett continued for 12 years in passenger and freight sections of the L.M.S. Operating Headquarters and, in 1944, he was posted to Birmingham (Saltley) as District Inspector. In 1945 he went to Peterborough as Assistant District Controller, the following year was

Mr. C. R. Bennett

appointed Assistant to the District Operating Manager at Gloucester, and, in 1948, to a similar position at Liverpool Lime Street. On the incorporation of the Cheshire Lines Committee into the Western Division of the London Midland Region at the end of 1948, Mr. Bennett became the first Assistant District Operating Superintendent at Liverpool Central, and in March, 1952, was appointed Assistant District Operating Superintendent, Euston. In 1954 he returned to Liverpool as District Operating Superintendent, Liverpool Central, and in August, 1957, he was appointed to the position he now vacates.

MR. D. S. DAVIES, Terminals Assistant to the Line Traffic Manager, South East Division, British Railways, Southern Region, who, as recorded in our July 28 issue, has been appointed Principal Assistant to the Line Traffic Manager, Derby, British Railways, London Midland Region, was educated at Hereford High School and Selwyn College, Cambridge. He joined the former London & North Eastern Railway at Sedgefield in

Mr. D. S. Davies

January, 1935, and after training in the Commercial, Operating and Docks Departments he joined H.M. forces in 1939 and served with the Royal Engineers in France and Germany. After demobilisation, he rejoined the L.N.E.R. as Assistant Dock Agent, King George Dock, Hull, in December, 1945, and was subsequently employed as Assistant Goods Agent, Middlesbrough, Assistant to District Goods Manager, Newcastle, Assistant to District Goods Superintendent, Hull, Assistant District Commercial Manager, Peterborough, and Terminals Assistant to Line Traffic Manager, South East Division, Southern Region, until leaving to take up his new appointment.

MR. R. L. WELBURN, Stationmaster, Widdrington, British Railways, North Eastern Region, has been appointed Stationmaster, Fencehouses.

MR. F. R. GUNTON, Assistant in the Accounts & Statistics Division, British Transport Commission, has been appointed Finance Assistant to the Line Traffic Manager, Manchester, British Railways, London Midland Region.

MR. R. R. BUTTER, Assistant (Modernisation) to the Operating Officer, Euston, British Railways, London Midland Region, has been appointed District Traffic Superintendent, Carlisle.

MR. L. P. LEWIS, Traffic Costing Officer, West Midlands Division, Birmingham, British Railways, London Midland Region, has been appointed Finance Assistant, Line Traffic Manager, Crewe.

MR. W. H. HOLMES, Divisional Traffic Costing Officer, Manchester, British Railways, London Midland Region, who, as recorded in our July 28 issue, has been appointed Principal Assistant to the Line Traffic Manager, Crewe, began his railway career with the former London Midland & Scottish Railway in 1926 in the Motive Power Department at Cricklewood and in 1939 was appointed an Assistant Controller at Kentish Town, Freight Trains Clerk, District Operating Superintendent's Office, Euston, in 1946, and District Passenger Trains Inspector, D.O.S.O., Euston in 1947. In 1951, Mr. Holmes joined the British Transport Commission as Assistant in the Costings Division, and was appointed Assistant Traffic Costing Officer, Euston in 1953, Traffic Costing

Mr. W. H. Holmes

Officer 1956, and Divisional Traffic Costing Officer, Manchester, in 1958. Mr. Holmes is the holder of a Brunel Silver Award.

MR. F. BATEMAN, Traffic Assistant to the Divisional Traffic Manager, Manchester, British Railways, London Midland Region, has been appointed District Operating Superintendent, Manchester (South).

MR. J. W. TONGE, Internal Relations Officer, British Railways, London Midland Region, who, as recorded in our September 8 issue, has retired, began his railway career in the former Lancashire & Yorkshire Railway Head Office at Manchester in 1920 and subsequently gained experience at a number of goods and passenger stations in Lancashire and in the Manchester District Goods Manager's Office of the London Midland &

Mr. J. W. Tonge

Scottish Railway. He has served at Euston since 1927 in the Overseas & Continental Office and the Chief Commercial Manager's Office. He was appointed Chief of the Passenger Trains Section in 1941, and Chief Clerk of the Personal & General Section in 1946. Mr. Tonge became Assistant District Passenger Manager, Euston, in 1947, Trade Advertising Assistant to the Chief Commercial Manager in 1948, Assistant Public Relations & Publicity Officer in 1951, Public Relations & Publicity Officer in 1955 and Internal Relations Officer in 1957.

Overseas

MR. A. L. HODGES, Assistant Registrar, Canadian Pacific Railway in London, has retired. He is succeeded by MR. C. N. HUNT.

MR. ABU BAKR ALI RIDA, M.I.C.E., M.I.STRUCT.E., Deputy General Manager, Sudan Railways, who has been appointed General Manager Designate, was born on August 2, 1921. He completed his secondary education at Gordon Memorial college in 1939 and took up an engineering course at the Higher Schools in Khartoum during the period 1940-1945, obtaining an engineering diploma on the successful completion of this course in 1945. In the same year he joined the Sudan Railways as a civil engineering assistant. He completed a two-year training course with Messrs. Goode & Partners, consulting engineers in London, and obtained A.M.I.Struct.E. in 1948 and A.M.I.C.E. in 1949, transferring to full membership of both institutions in 1959. He became District Engineer in 1950, Assistant Harbour Engineer in 1953, and transferred to the headquarters of the Engineering Department in 1954 as Assistant New Works Engineer. During this period he took charge of a number of important engineering works, including the Atbara water supply project, Port Sudan power station and the design and construction of prestressed concrete sheds as well as survey work for railway line extensions. He was promoted to the post of Assistant Chief Engineer in 1955 and became Chief Engineer in January, 1957. During his tenure as Chief Engineer, the Western Extension from Aradeib to Nyala (489 kilometres) was constructed and the survey of the Southern Extension from Babanousa to Wau was completed. Mr. Ali Rida was appointed Deputy General Manager in May, 1959.

Mr. Abu Bakr Ali Rida

Industrial

MR. H. DUNN, Overseas Manager, Thos. Cook & Son Ltd., has retired.

MR. L. S. KINNEAR has resigned from the board of the British Oxygen Co. Ltd.

MR. P. L. MCILLMOYLE has been appointed Assistant Manager, Purchasing Department, Castrol Limited.

MR. G. H. WALTON, a Director of British Insulated Callender's Construction Co. Ltd., and of Painter Bros. Ltd., members of the B.I.C.C. Group, has retired.

MR. C. F. HURST has been appointed Assistant Managing Director of Samuel Osborn & Co., Ltd. Mr. Hurst is now Deputy Chairman & Assistant Managing Director of the company.

MR. R. T. GLADWELL has been appointed Industry Group Manager for Aircraft–Marine Products (Great Britain) Limited. He will be responsible for the control of the specialised industry groups within the sales organisation.

MR. B. C. HARRISON has been elected Deputy Managing Director, Alfred Herbert Limited. MR. A. E. SMITH has been appointed to the board as Deputy Financial Director. MR. J. W. ELLSON has retired from the board at his own request and will undertake lighter duties within the company.

The Castrol Group of companies has announced the following appointments with effect from January 1, 1962: MR. K. C. MCCARTHY to be General Manager, Castrol Division; MR. W. F. PHILLIPS and MR. R. LAYET to be General Managers, Overseas Division; MR. E. E. HUGHES to be Sales Manager, Castrol Division; MR. K. E. SHUREY to be Group Publicity Manager; MR. W. F. FREESTONE to be Manager, Overseas Division; MR. C. E. PARSONS to be Manager, Overseas Marine Department; and MR. J. C. EDMUNDS to be Assistant Group Publicity Manager.

MR. D. A. LARKINS has been appointed Chief Accountant, Lansing Bagnall Limited.

MR. DENIS L. PERRY, Sales Manager, B. & S. Massey Limited, has retired after over 48 years' service with the company. MR. J. H. CALLAGHAM has been appointed to succeed him.

MR. A. PATERSON has been appointed Works Manager, Trafford Park Works, Associated Electrical Industries (Manchester) Limited. MR. A. J. R. VEALE has been appointed Assistant Works Manager.

MR. T. G. DAVIES, General Manager, Western Welsh Omnibus Co. Ltd., is to retire at the end of this year. He will be succeeded by MR. I. L. GRAY, General Manager, Rhondda Transport Co. Ltd.

MR. M. J. THEAKSTON, London Manager, Robert Hudson Limited, has been appointed Export Sales Manager, Leeds. He succeeds MR. R. A. HUDSON who has taken up specialists duties in the company's Manufacturing Division. MR. B. A. VICKERY has been appointed London Manager. MR. F. THEAKSTON will continue as Consultant Director, London Office.

MR. J. R. BEARD will be retiring from the partnership of Merz & McLellan, consulting engineers, on December 31, but will continue his association with the firm as a Consultant. From January 1, 1962, MR. A. E. POWELL will act as Senior Partner.

SIR JOHN ELLIOT, Chairman, Thos. Cook & Son, Ltd., leaves London on September 17, for an extended tour of the company's organisation in the United States and Canada. He is due back on October 16.

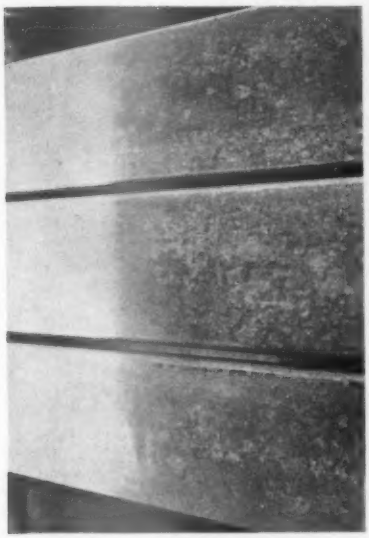
MR. J. O. DE M. HOPPER, Oversea Representative, Expandite Limited, left London on September 3 for a tour of Italy, Greece, Turkey, Lebanon, Pakistan, Ceylon, India, Burma, Thailand, Malaya, Vietnam, Hong Kong, Korea, Japan and the Phillipines.

The Minister of State, Board of Trade, the RT. HON. FREDERICK ERROLL, M.P., is visiting South East Asia from September 6 to October 11. Mr. Erroll's itinerary includes Rangoon, Singapore, Malaya, Indonesia, Thailand, Cambodia, South Vietnam and Hong Kong.

Obituary

We regret to record the death, on September 5, at the age of 65, of MR. L. B. GEORGE, who was, until his recent retirement, Chief of Rolling Stock & Motive Power, Canadian Pacific Railway. A photograph and biography was published in our issue of May 12.

NEW EQUIPMENT *and Processes*



SHOT-BLASTING SERVICE

Automatic shot-blasting and spray-sealing of all fabricated steelwork are carried out under a new service offered by a structural engineering and standard steel-building company. The process is claimed to increase about four-fold the life of the final painted finish of steelwork. It is also pointed out that, because of the considerable increase in recent years in the amount of structural steelwork exported to all parts of the world, the process will greatly simplify corrosion problems relating to fabricated material exposed to sea water and humidity in transit by ship.

Illustrated on this page is an example of partly shot-blasted material.

Further details can be obtained from Sanders & Forster Limited, 3, Buckingham Palace Gardens, London, S.W.1.

WOLF RANGE EXTENDED

The Wolf range of electric tools has been augmented by high-frequency drills, reamers, screwdrivers, shears, grinders, angle-grinders, and sanders. Four examples of the new machines are illustrated on this page. Usually operated on 200-cycle 3-phase supply converted from normal mains supply through a frequency changer, the tools incorporate a squirrel-cage induction motor wound for two poles and developing a rotor speed of 12,000 r.p.m. Main advantages claimed are high production efficiency; light weight; no motor failures; low operating cost, and constant speeds.

Fully illustrated details are contained in an eight-page brochure, which can be obtained from Wolf Electric Tools Limited, High Frequency Division (Sales & Service), 47-48, Barker Street, Handsworth, Birmingham, 19.

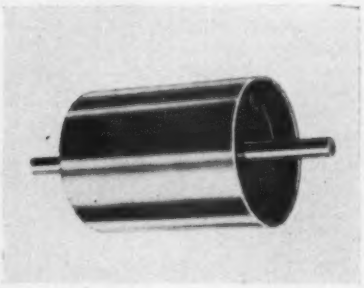
FINE-FINISH SPRAYING

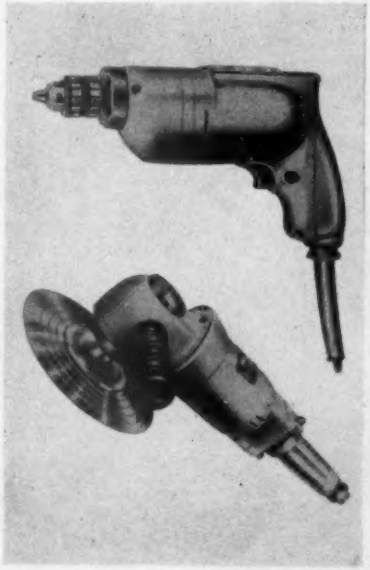
The Golden gun and a completely new range of fine-finishing nozzles have been developed for use with the Graco airless Hydra-Spray equipment already on the market. The gun is lightweight and with a rotary-action packing which eliminates leaks. Very light trigger-pressure gives an immediate, precise spray pattern, and there is no "lag" to cause spitting. The nozzles permit fine finishes to be applied with feathered edges, thus enabling passes to be lapped; their use calls for lower air pressure to operate the pressurising pump than was previously necessary, and they can apply thinner coatings than have so far been possible. Other improvements include a swivel attachment on the gun which gives the operator more freedom with less fatigue.

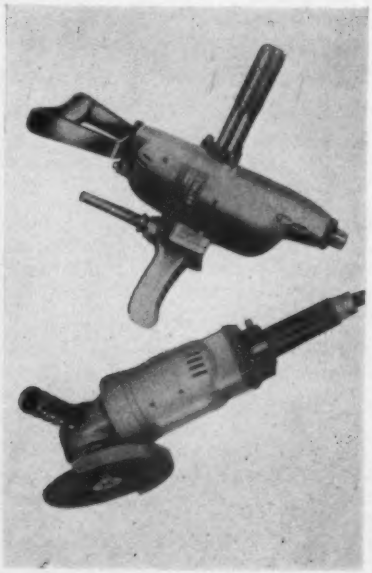
Further details can be obtained from Alfred Bullows & Sons Ltd., Long Street, Walsall, Staffordshire.

MAGNETIC SEPARATOR

Andox 5 permanent magnet pulleys have been developed to extract tramp iron from processed materials. The unit illustrated includes magnets made of Anistropic barium-ferrite ceramic, a material of exceptional coercivity which permits a radial-pole construction as distinct from the axial disposition adopted with Alcomax magnets.







The superior field intensities so produced are equivalent to those of electromagnetic designs, with flux distribution patterned to conform to the burden contour on the belt conveyor. Highest intensity occurs at the centre of conveyor where burden depth is the greatest.

The pulleys are guaranteed for the life of the installation. They are available in a range of sizes from 12 in. to 24 in. dia. for any belt width.

Further details can be obtained from Rapid Magnetic Limited, Lombard Street, Birmingham.

DRAUGHT EXCLUDER

Seal is a self-adhesive, plastic-foam draught excluder made in 20-ft. lengths approximately $\frac{3}{8}$ in. wide x $\frac{1}{4}$ in. thick. It provides an immediate, permanent check to draughts and dust, stops rain and snow from seeping under doors and windows, and reduces noise.

Further details can be obtained from the manufacturer, Expandite Limited, Chase Road, London, N.W.10.

SEMI-TUBULAR RIVETS

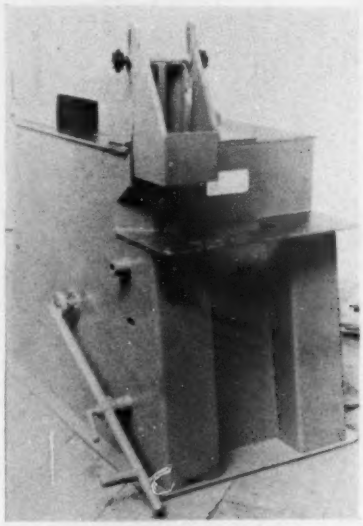
A range of drilled, semi-tubular rivets is being produced in mild steel, copper, brass, and aluminium alloys to British Standard specifications and particularly to special order, as, for example, where special head-shapes and sizes are required. Sizes range from $\frac{1}{8}$ in. to $\frac{3}{8}$ in. in dia. and up to $6\frac{1}{2}$ in. in length.

Further details can be obtained from the manufacturer, Cooper & Turner Limited, Vulcan Works, Vulcan Road, Sheffield, 9.

HYDRAULIC BACKHOE

The Hyster hydraulic backhoe is designed to mount on 60-in. gauge tractors, and Cat. HT-4, and 955 Traxcavators. The hoe front can swing at its full rated speed of $5\frac{1}{2}$ r.p.m. through 210 deg. while the bucket is being raised or lowered. Its design allows digging to a depth of 12 ft. 6 in. and straight backwall digging to 6 ft. Three buckets are available—16 in. (5·3 cu. ft.); 22 in. (7·8 cu. ft.), and 30 in. (13·5 cu. ft.).

Further details can be obtained from the Hyster Company, International Division, P.O. Box 328, Peoria, Illinois, U.S.A.



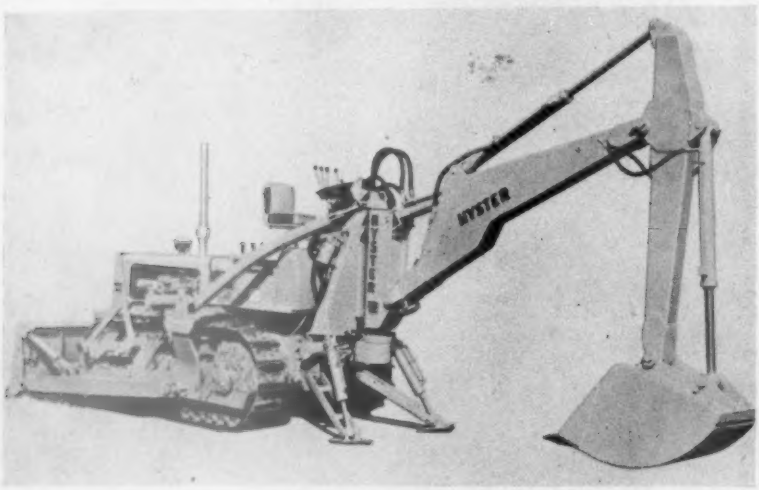
RAPID CUTTING MACHINE

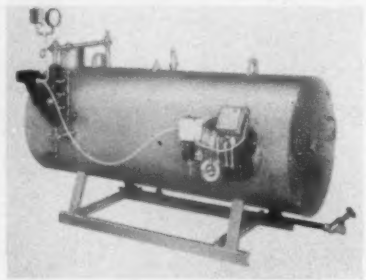
The Neva-Scimitar, an ultra-rapid cutting machine, is claimed to be suitable for every kind of workshop, handling round or square bars, tubes, channels, and sheet metal. As an example, it can cut 2-in. x 2-in. x $\frac{5}{16}$-in. angle-iron in less than 2 sec., to maintain a rate of 1,500 cuts an hour. Capacities are:—

Rod or bar up to 4 in. in dia.;
Tube up to 4 in.
Heavy sections up to 6 in. x 4 in.
Strip up to 20 in. x $\frac{3}{4}$ in.
Sheet metal up to $\frac{1}{4}$ in. thick x any size.

Advantages claimed for the cutting machine are: lack of distortion; minimum generation of heat during cutting; smooth burr-free cuts, and economic siting—clamps and grouting are unnecessary.

Further details can be obtained from the manufacturer, Anderston Clyde Engineers Limited, Irk Vale Works, Chadderton, Manchester, Lancashire.





COMPACT ECONOMY BOILER

A line of compact economy boilers features a side-fired design claimed to reduce floor space more than 20 per cent over end-fired models of the same capacity. It offers gas, oil, or combination gas/oil-fired models, rated at 6, 12, 15, 20, and 30 h.p., and operating from 201,000 to 1,005,000 B.t.u./hr. output at 100 or 125-lb. working pressure standard-pressures available to 500 lb. w.p.

Further details can be obtained from the Eclipse Boiler Division of Ad. Auriema Inc., 85, Broad Street, New York 4, U.S.A.

PLASTIC MATERIAL

The introduction of Polypenco MC. Nylon 901 enables large sizes of tubes, rod, plate, and discs to be offered cheaply.

Plate sizes available range from $\frac{1}{2}$ in. to 4 in. thick x 24 in. x 48 in.

Further details may be obtained from Polypenco Limited, 68 Tewin Road, Welwyn Garden City, Herts.

GEAR SPEEDER

For many years available in the U.S.A., the Gear Speeder is now available in the United Kingdom. It offers a practical means of testing gear sets for objectionable operating noise. In practice, the set to be inspected is operated in an acoustical chamber at varying speeds and loads under the personal observation of the inspector. It may now be equipped with a microphone, a broad-band amplifier, and meter. Sound intensity is measured and indicated by a pointer on a graduated visual scale.

Further details can be obtained from Precision Gear Machines & Tools Limited, Red Ring Works, Bodmin Road, Wyken, Coventry.

Development of door-to-door transport

The intermediate transfer from road vehicle to rail wagon and back again has been one of the factors which have hindered the full development of British Railways freight-traffic plan, which aims at a very substantial increase in the carrying of the country's merchandise.

An experiment now in progress offers interesting possibilities of solving the problem so far as bulk materials are concerned.

This experimental project, known as the "Bulkrane" scheme, is a transfer system for road/rail containers which needs no station facilities other than a cart road giving access to road vehicles. No station cranage is required, and the system can, therefore, be operated at almost any British Railways goods depot.

Basic road unit

The Bulkrane, the basic road unit on which the system depends, is an eight-wheel vehicle specially developed to suit British Railways' requirements, and is designed to carry two special containers each of 6 tons 5 cwt. The portal type of lifting apparatus mounted on the vehicle enables containers to be transferred between rail wagon and road vehicle and performs the tipping operation.

Exact positioning of the Bulkrane is unnecessary because the lifting equipment includes a swivel beam. For the discharge of powdered materials the vehicle is equipped with a Wellworthy-Ricardo compressor driven by power take-off and capable of supplying oil-free air at 14 lb. per sq. in. The vehicle crew of two is capable of handling all transfer and discharge operations without assistance.

Containers developed

To complement the mobility of the Bulkrane, British Railways has developed nine types of special containers all of which are available for experiment.

Type MD is an open-steel, automatic stacking container designed for the conveyance and discharge of bricks. This container incorporates a removable end and clamping-beam arrangement which enables a cube of up to 2,200 bricks to be handled as a complete unit. Loading may be effected either by barrowing the bricks into the containers mounted on rail wagons or the bricks may be pre-stacked into cubes of the correct dimensions and picked up by containers with the help of the Bulkrane. At destination the container is off-loaded to ground from the Bulkrane. The detachable end is removed, the container up-ended, the clamp beam released, and the container withdrawn to leave the cube of bricks stacked on the ground as a complete unit.

Type MP is a mild-steel tank for general liquids, and these can be filled when the container is mounted on rail wagon or Bulkrane. Discharge is by gravity through bottom outlet and may be effected from either vehicle. Two containers can be carried on each rail conflat or Bulkrane and the total payload is 2,060 gal.

Type MB is an open-steel, end-door discharge container for the conveyance and discharge of lighter density sand, aggregates, farm produce, and other bulk traffics of comparatively low density not susceptible to damage from moisture. Filling may be carried out by grab crane or chute at quarry, washing plant, building site, or store. Discharge is by tipping from the Bulkrane.

Type MC is a steel, drop-side open container for loose or packaged bricks and other traffics normally carried in standard B.R. open containers. To facilitate loading and unloading, which can be at ground level, all four sides of the container may be dropped. The sides are spring-loaded to facilitate handling.

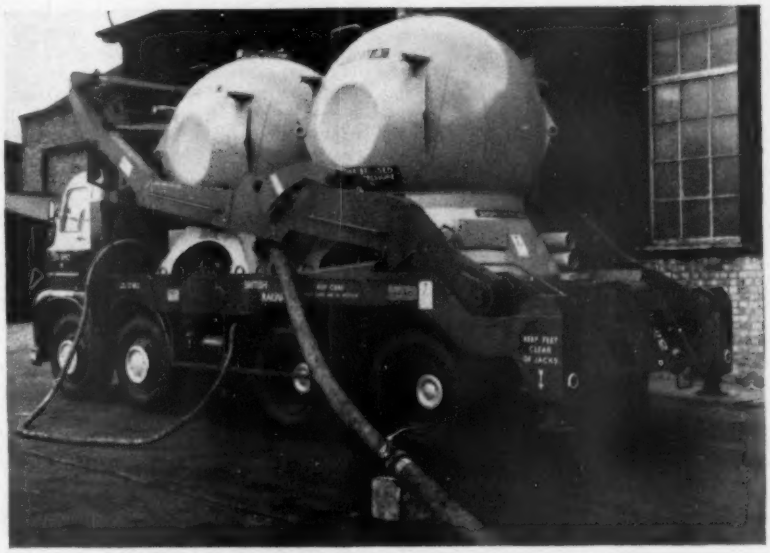
Type MR is a stainless-steel insulated-tank for edible oils and other pre-heated liquids. It has an interior steam coil, 4 in. thick insulation and plastic outer skin. Discharge is by gravity through outlet at bottom of container.

Type MA is a steel open bucket for sand, gravel, roadstone, heavy aggregates, and spoil. Discharge is by tipping from the Bulkrane.

Type MJ is a steel, water-tight, anti-corrosive lined container for grain and malt. Discharge is by gravity tip through the end aperture or by vacuum pump through a specially-designed connection to the unicone-type outlet which is incorporated in the discharge arrangement. The discharge mechanism allows critical regulation of the flow from the container during discharge whether this be by gravity or by gravity assisted suction.

Type MW is a light-alloy, pneumatic-discharge container for flour and other powders of low density. Discharge is by air pressure assisted by gravity tip. Maximum working pressure is 10 lb. per sq. in.

Type MU is a steel, pneumatic-discharge container for cement, lime, salt and various high density powders. The Interior has a



Discharging containers on a Bulkrane by compressed-air unit

Loading containers from Bulkrane unit on to a rail wagon

Unloading a Bulkrane unit

protective coating. Discharge is by air pressure which may be supplied by any suitable compressor. Maximum working pressure is 30 lb. per sq. in.

The Bulkrane and various types of containers have been manufactured by Fodens Limited, Mickleover Transport Limited, Park Royal & Inter-consult (London) Limited.

Presentation to Museum of British Transport

The first class Pullman saloon "Topaz," which until recently was in regular service between London and the South Coast, was presented to Sir John Benstead, Deputy Chairman of the British Transport Commission, at the Museum of British Transport on September 12.

The gift was made possible by Mr. Henry Maxwell, a railway enthusiast, who donated a substantial sum of money toward the cost and restoration of the car, and through the financial help and labour of the Pullman Car Co. Ltd. The handing-over ceremony took place in the exhibits hall of the museum in the presence of some 60 delegates to the annual conference of the International Commission for Transport Museums which took place this week and which closes today, September 15. Delegates spent much of September 12 at the museum, where they inspected exhibits, heard papers, and saw practical demonstrations of various aspects of the restoration of transport relics.

More money needed for museum

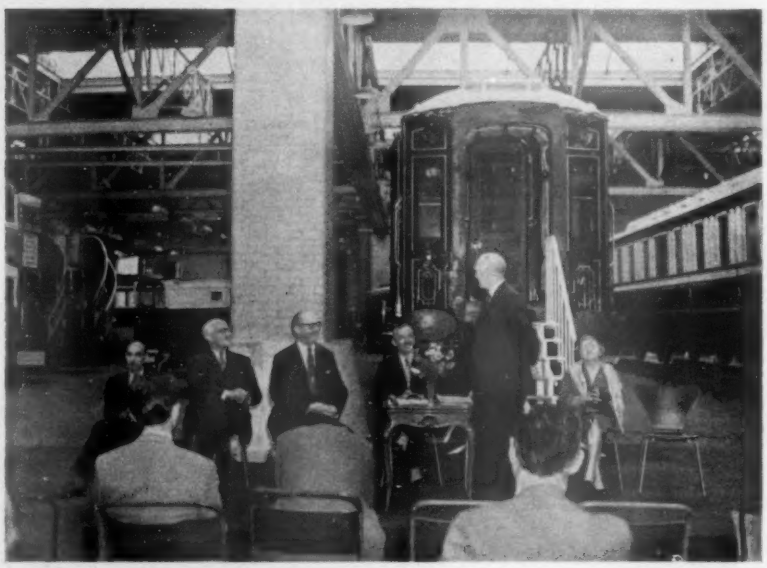
The ceremony was opened by the Curator of the museum, Mr. J. H. Scholes. In making the presentation, Mr. Maxwell spoke of the necessity to find money to enable the exhibition to be opened to the public. He was confident that, as soon as the public realised the extent and character of the exhibits assembled that day, powers would be given to the British Transport Commission to include them with those already on public view. It was most desirable that a representative of a vintage Pullman car be included. The Pullman cars that had been built, principally for the South Eastern & Chatham Railway, before and just after the 1914-18 war were of an almost unique standard of craftsmanship and perfection in design. They were literally works of art and their solidity of construction had enabled them to survive in service until very recently. Mr. Maxwell said he would not state the exact age of "Topaz"—the Pullman was a lady, and one did not mention a lady's age, particularly when she was in retirement!

He stressed the part played in the donation by Mr. Frank Harding, Managing Director of the Pullman Car Co. Ltd., and of his company. He himself had not borne the entire cost of the gift; he had approached Mr. Harding, a most approachable man who even suffered the public gladly. From the beginning, the Pullman Car Company and Mr. Harding had been enthusiastic and had shared in the expenses and the effort that had gone into the restoration.

Mr. Maxwell wished to pay tribute to the craftsmen at Preston Park. But for their enthusiasm and inherent skill, the work of restoration would have been virtually impossible. He also wished to thank Mr. N. Johnson, the Chief Engineer.

Receiving the car on behalf of the British Transport Commission, Sir John Benstead, Deputy Chairman, followed Mr. Maxwell's observations on the age of "Topaz" with the comment that he himself had preceded her into service by three years, and that the deterioration of "Topaz" was no greater than his own!

Mr. Harding expressed his pleasure that a Pullman vehicle had been accepted for permanent preservation. The Pullman car had a long history in this country. The company was very proud of this, and of the standard of craftsmanship—which was still being maintained. This standard was as high at Preston Park today as ever it had been, and he assured Sir John Benstead that the works would be pleased to accommodate him whenever he needed it!



Sir John Benstead (standing) receiving the Pullman coach from Mr. Maxwell. Mr. Harding, Managing Director, Pullman Car Co. Ltd., is facing second from the left

VICTORIAN GOVERNMENT RAILWAYS WAGON

First of 30 ELF 50-ton wagons being constructed for standard-gauge line between Melbourne and Sydney

CONTRACTS AND TENDERS

Large contracts for signalling equipment at Lamesley

Two large contracts have been placed by the North Eastern Region of British Railways with the Westinghouse Brake & Signal Co. Ltd., to supply the major part of the technical equipment to be installed in the mechanised marshalling yard now under construction at Lamesley, south of Newcastle. The first contract covers the supply and installation of the complex signalling equipment required for controlling shunting operations within the yard. It consists of a route-relay interlocking system, route-storage equipment, two primary retarders, 68 ft. 6 in. long, eight secondary retarders 78 ft. 6 in. long, 64 electro-pneumatic points, and 180 track and rail circuits. On the crest of the hump an elevated three-aspect double-sided lunar white hump signal will be provided, which will display "Stop," "Slow," and "Fast" aspects. Nineteen position-light ground subsidiary signals are also to be provided in this area. The second contract is for a route-relay interlocking system to control the entrances and exits of the Lamesley yards, and for colour-light signalling on 13 miles of adjacent main line. Further tenders will shortly be invited for radio equipment to link the control tower and shunting locomotives, and also for train description apparatus to be installed in the control tower. Other equipment will include inter-communication telephones between all points and loudspeaker equipment between key points.

South African Railways has placed orders for 80 passenger vehicles for its road transport services to the value of R.863,372. One order for 40 chassis fitted with 175 b.h.p. diesel engines costing R.244,652 was placed with A.E.C. Vehicles (S.A.) Limited, another for 10 chassis fitted with 200 b.h.p. diesel engines went to Leyland Albion (Africa) Limited, this order was worth R.72,800. A third order for 20 chassis fitted with 180 b.h.p. V8 diesel engines with eight-speed gearboxes to the value of R.114,752 was placed with Motor & Industrial Investments Limited, and a fourth for 10 chassis costing R.57,118 went to Cargo Motor Corporation Limited. Contracts were also placed for the bodies for these chassis with Africa Body & Coach (Pty.) Ltd., R.51,000; Bus bodies (S.A.) Limited, R.275,640, and Blanckenbergs Body Works Limited, R.47,410.

British Railways, North Eastern Region, has placed the following contracts :—

Dorman Long & Co. Ltd.: provision of fabricated steelwork for bridge No. 105, carrying the road over the railway at Bradley on the Leeds-Huddersfield line ;

Constructors Limited: provision of steel shelving for the storage of diesel components at South Gosforth car sheds ;

Ruddock and Meighan Limited: (i) raising the superstructure, abutments and bearings also approach roadways, retaining and boundary walls of bridges Nos. 199 and 201 between Mirfield and Thornhill on the Manchester-Normanton line; (ii) repair of the damaged corporation sewer near Morley on the Leeds-Huddersfield line ;

J. H. Eblett Limited: cleaning and painting of Willington Viaduct, also bridges on the Riverside and Ponteland Branches ;

R. Blackett & Son Ltd.: (i) erection of a sub-station, boiler house, coke and coal bunkers at Darlington Bank Top Station; (ii) construction of an annexe at Darlington North Road Locomotive Works for inspecting locomotives ;

F. & J. Watkinson: provision of track drainage at Hemsworth on the Leeds-Doncaster line;

W. E. Hargraves: installation of central heating, water and gas in the Pre-Apprentice School at York Carriage and Wagon Works ;

Brush Electrical Engineering Co. Ltd.: installation of extra high voltage switchgear in the control tower substation at Lamesley New Marshalling Yard ;

Mitchell Construction Co. Ltd.: (i) earthworks in the main line embankment at Healey Mills; (ii) repairs to the coaling plant at York Motive Power Depot;

Cleveland Bridge & Engineering Co. Ltd.: demolition of bridge No. 54 at Wakefield, and raising abutments and approach roads and construction of slab decking ;

Ingersoll-Rand Co. Ltd.: provision of three air compressors for the Chief Civil Engineer, York;

Dean Smith & Grace Limited: provision and installation of a toolroom lathe and ancillary equipment at North Road Locomotive Works, Darlington ;

Taylor Hubbard & Co. Ltd.: provision of a 7½-ton rail-travelling hand crane for Blyth Staiths;

South Wales Switchgear Limited: installation of medium voltage switchgear in the control tower sub-station at Lamesley marshalling yard;

Sam Allon Limited: demolition of Railway Street goods shed, Hull ;

Brighouse Estate Co. Ltd.: recovery of copings and removal of part of the platforms at Tingley, near Leeds ;

Curfew Doors & Shutters Limited: replacement of six timber roller-doors with steel roller-shutter doors at the Carriage and Wagon Works, Walkergate ;

L. Ward & Co. Ltd.: improvement of staff amenity block and provision of new cycle storage shed at Goole ;

Totty & Sons Ltd.: alterations and additions to staff amenity buildings at Bradford Valley goods depot ;

Walter Kidde Co. Ltd.: supply and installation of fire extinguishing equipment at the Healey Mills and Newport marshalling yards.

British Railways, Southern Region, has placed the following contracts:—

J. W. Ellingham Limited: earthworks and drainage as part of the electrification extension at Chislet Colliery ;

Durable Asphalte Co. Ltd.: resurfacing and surface dressing of footpaths and platforms, London (Eastern) District; resurfacing of Hungerford footbridge, Charing Cross;

Carter-Horseley (Engineers) Limited: new water tower Exmouth Junction Motive Power Depot;

Alfred Bagnall & Sons Ltd.: renovation to carriage cleaning sheds, Wimbledon Park;

C. & T. Painters Limited: station renovations, Sittingbourne;

Aubrey Watson Limited: part reconstruction of Robin Hood Lane bridge, Wokingham;

Sidney Pratt (Builders) Limited: new brake shop, Exmouth Junction;

Brooks Ventilation Units Limited: Improved ventilation to carriage and paint shops, Lancing carriage & wagon works;

The Demolition & Construction Co. Ltd.: demolition of coaling plant, Stewarts Lane Depot; repairs to Manor Lane bridges, Hither Green.

The Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Iraq:

1,000 carriage and wagon tyres.

The issuing authority is the Directorate-General, Iraqi Republican Railways, Baghdad West (International Tenders Section), from which tender documents can be obtained price I.D/s. a set. Tenders must be accompanied by a deposit or Bank guarantee of I.D. 620s. The tender No. is IRRS/G/900/61. The closing date is October 15. The Board of Trade reference is E.S.B./28557/61. No further information about this call for tenders is available in Export Services Branch.

From Lebanon :

75 tyres for coupled locomotive wheels, narrow gauge.

125 tyres for coaches and 10-ton wagons, narrow gauge.

The issuing authority is the Direction des Chemins de Fer de l'Etat, Libanais, and bids should be sent to La Direction des Chemins de Fer, Souk Arwam, Beirut. The closing date is October 16, 1961. The Board of Trade reference is E.S.B./28582/61.

From Pakistan :

1 tensile testing machine.

The tender No. is P-403/P6/4/61. The closing date is October 5, 1961. The Board of Trade reference is E.S.B./29146/61.

1 electric pneumatic power hammer.

The tender No. is P430/P6/D4-61. The closing date is October 4, 1961. The Board of Trade reference is E.S.B./29129/61.

660 cwt. tin ingots

2,230 cwt. lead pig.

The tender No. is P-7/427/2-61. The closing date is October 7, 1961. The Board of Trade reference is E.S.B./29128/61.

8,850 tons pig iron.

The tender No. is P7/426/1/61. The closing date is October 16, 1961. The Board

of Trade reference is E.S.B./29126/61.

25,881 cwt. mild-steel sheets and plates.

The tender No. is P7/387/3/61. The closing date is October 16, 1961. The Board of Trade reference is E.S.B./29127/61.

90 tons ticket board.

The tender No. is P-337/P5/4/1961. The closing date is September 30, 1961. The Board of Trade reference is E.S.B./28584/61.

376 sheets of Salvabestos sheets.

The tender No. is P5/436-A/1-1961. The closing date is October 3, 1961. The Board of Trade reference is E.S.B./28598/61.

The issuing authority for the above tenders is the Chief Controller of Purchase, Pakistan Western Railway, Empress Road, Lahore, to whom bids should be sent.

From Portuguese East Africa :

1 portable locomotive boiler cleaning plant with spares.

The issuing authority is the Ports, Railways & Transport Department, Lourenço Marques to which bids should be sent. The tender No. is 236/61. The closing date is November 3, 1961. The Board of Trade reference is E.S.B./28860/61.

From the Federation of Rhodesia and Nyasaland:

1 S.S. & S.C. centre lathe for toolroom work, 17 in. diameter, swing 36 in. between centres, with totally enclosed fan-cooled motors for 550V. 3-phase, 50-cycle, 3-wire supply.

The issuing authority is the Secretary, Rhodesia Railways Tender Board, P.O. Box 1999, Bulawayo, Southern Rhodesia, to whom bids should be sent. The tender No. is T.B.546. The closing date is October 12, 1961. The Board of Trade reference is E.S.B./29103/61.

From Sudan :

1 pipe screwing machine complete with electric motor, starter and all accessories ready for connecting to a supply of 440V. 3-phase, 50-cycles. Machine to take pipes of ½ in. to 3 in. dia. A tapping attachment, ⅜ in. to 1 in. or as near as possible is also required together with a complete set of tools for the machine.

The issuing authority is the Office of the Controller of Stores, Atbara, to which bids should be sent. The closing date is October 17, 1961. The Board of Trade reference is E.S.B./29112/61.

From Thailand :

529,700 rail anchors.

The tender No. is 04263. The closing date is October 13, 1961. The Board of Trade reference is E.S.B. 27058/61. The issuing authority is the State Railways of Thailand, Yod-Se, to which bids should be sent.

From Uruguay :

20 railway wagons for cargo and livestock, for main-line service, 1,435-mm. gauge.

The issuing authority is the Administration de Ferrocarriles del Estado, to which bids should be sent. The tender No. is 63/61. The closing date is October 31, 1961. The Board of Trade reference is E.S.B./25272/61.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

NOTES AND NEWS

Bulk transport of flour. The tank which was illustrated on page 287 of our last week's issue was described as being made of magnesium alloy. Further information received from the manufacturer shows that it is made of aluminium magnesium alloy.

Accident in France. Two Britons were killed when their car plunged 20 ft. from a bridge on to a railway line in the path of an oncoming goods train.

Train tears up track. An electric train left the track as it was entering Bidston Station, Birkenhead, on September 10, and ploughed up 100 yd. of track. The 250 passengers were unhurt. The passengers, travelling from Liverpool Central to West Kirby, were transferred to special buses.

Revised British Standard Specification. A revision of the 1935 edition of B.S. 634 covers two grades of air-drying insulating varnish for use as a finishing surface coating for electrical equipment. These grades are defined by their performance abilities. The original edition of the standard specified two types of varnish, one using spirit solvent and the other a non-alcoholic solvent, but this division has not been maintained. Copies of this Standard may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1, price 4s. each (postage will be charged extra to non-subscribers).

Bus side contracts. New contracts, worth £28,500, for advertising on bus sides on London Transport red and green buses have just been arranged with British Transport Advertising. Between them, five companies have ordered a total of 1,175 sides. Through its agents (Havas) Air France has substantially increased its present holding. The other four advertisers concerned are Associated Rediffusion (agent: A. W. Newton), The Daily Mail (S. H. Benson), Gallahers (Service Advertising) and Meggesons (R. S. Caplin). The advertisements will appear on the buses during the coming weeks for periods of six weeks to a year.

Revised British Standard vulcanised fibre sheet. The British Standards Institution has published a revision of the 1936 edition of B.S.216 covering two grades of vulcanised fibre sheet from 1/16 in. to 1 in. in thickness for use in electrical equipment. The original edition of this standard covered only one grade of sheet, which was of natural colour. The edition now includes a second grade, having slightly lower properties. Either grade can be obtained in other colours, although natural colour is assumed unless otherwise stated. The test for water absorption has been omitted from the edition, but a warning is given that the fibre should be used under dry conditions. The methods of test have been revised to bring them into agreement so far as possible with the methods of test for other insulating materials. Copies of this Standard may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1, price 6s. each (postage will be charged extra to non-subscribers).

Britain's Railway Queen. The 31st Railway Queen of Britain, Miss Susan Garside of Southport, was crowned on September 9 at Belle Vue, Manchester, by Mr. D. McKenna, Assistant General Manager, British Railways, Southern Region, and Mr. G. W. Brassington, Assistant General Secretary

Railway Queen crowning ceremony at Belle Vue

of the National Union of Railwaymen, officiating jointly. Miss Garside succeeded Miss Sheila Riordan of London.

Tube Investments Limited acquires site. Tube Investments Limited has acquired a 280-acre site at Washington, Co. Durham, for the erection of factories to increase its manufacturing capacity.

Extra police on Blackpool trains. Extra railway police will be on duty at stations and plain-clothes men will travel on trains during the period of Blackpool illuminations in an effort to check vandalism.

Special bus service to Biggin Hill. The London Transport Executive is to run a special bus service to Biggin Hill on September 16 in connection with the air display for " Battle of Britain " week.

Central Line improvements. The London Transport Executive has made improvements in the morning and evening rush hour services on the Central Line between Epping and Debden.

Southern electrification. From October 9, electric trains will be running on all principal Kentish lines of the Southern Region of British Railways; by October, electrification will have been completed on the Maidstone East-Ashford and Ashford-Ramsgate (via Canterbury) lines. A completely new timetable incorporating more trains and faster timings is scheduled for operation by June, 1962. Until then, trains will run to steam timings.

N.E.R. best kept station awards. The Best Kept Stations competition on the North Eastern Region of British Railways has resulted in 18 first-class awards, 32 second-class awards, 50 third-class, and 13 certificates of commendation. Six stations have received special-class awards; Beverley for the seventh successive year. Acklington and Riding Mill received top awards for the second successive year, and Corbridge, Northallerton, and Widdrington have advanced from the first-class section last year to the special awards this year.

U.S. railways cut spending. A survey by the U.S. Securities & Exchange Commission has shown that investment in plant and equipment fell sharply in the second quarter of this year. Most of the decline was because of the decrease in capital spending by the railways.

Electrical engineers' dinner. The second Electrical Engineers' Exhibition dinner will be held at Grosvenor House, on September 28.

More diesels on Marylebone-Aylesbury line. The number of diesel trains on the Marylebone-High Wycombe-Aylesbury lines of the London Midland Region of British Railways was further increased from September 11. On the High Wycombe-Marylebone line all trains, except five, on Mondays to Fridays are run by the multiple-unit stock. On Saturdays, all trains except one on this route will be run by diesels and on Sundays, all except five will be diesels. On the Aylesbury-Marylebone *via* Great Missenden line four

Inverness-Kyle of Lochalsh observation car crossing Caledonian Canal swing bridge at Clachnaharry

of the existing trains on Mondays to Fridays on the route from Aylesbury to Marylebone *via* Great Missenden are now run by diesels instead of steam. All diesel trains on both routes to Marylebone have first class as well as second class accommodation. The remaining steam trains also have first class.

Inverness-Kyle observation car. The Inverness-Kyle of Lochalsh observation car has proved so popular that the Scottish Region of British Railways is to retain the facility until September 23. The illustration above shows the observation car crossing a swing bridge over the Caledonian Canal.

West Riding winter services curtailed. Because some of the local passenger trains in the West Riding of Yorkshire are so little used, the North Eastern Region of British Railways has withdrawn them. Other local trains have ceased to call at certain intermediate stations.

Change of address. Matchless Machines Limited has now moved its offices, stores, and demonstration rooms to Matchless Works, Crawley Road, Horsham, Sussex, telephone number Horsham 60271.

Special trains from Edinburgh Festival. The Scottish Region of British Railways ran a special train from Edinburgh, Waverley, to London to take the Covent Garden Opera Company from the Edinburgh Festival. Eleven wagons of scenery were transported by another special train.

Augmented service between Glasgow and Kirkintilloch. The Scottish Region of British Railways has augmented the service between Glasgow (Queen Street) Station and Kirkintilloch. With the exception of two trains the service will be worked by diesel units.

Irish car-ferry service. The Caledonian Steam Packet Co. (Irish Services) Ltd. has introduced a daytime motor car and passenger service to and from Northern Ireland by the Stranraer-Larne route. The sailing by ts. *Hampton Ferry* is a drive-on/drive-off service and is an additional sailing to the mail service by ts. *Princess Margaret*.

Aberdeen-Inverness winter service. The Scottish Region of British Railways has continued through the period of the winter timetable the additional express diesel trains between Aberdeen and Inverness introduced last June.

Coupling company depot to be opened. British Ermeto Corporation Limited and Simplifex Couplings Limited, both members of the Alenco group are to open a depot in Manchester on October 2. The address will be Blackett Street, off Fairfield Street, Manchester. The telephone number will be Ardwick 4558.

Two stations closed by derailment. An electric train from Bickley, Kent, was derailed near Blackfriars Bridge on the evening of September 6 and lines were blocked stopping trains running from Holborn Viaduct and Blackfriars. Three coaches were derailed. No one was hurt, and the few passengers on the train climbed down on to the track on ladders.

B.T.C. exhibition for Coventry. The New Architecture in Transport Exhibition recently staged in London by the British Transport Commission is to be re-displayed at Coventry in Owen Owen's department store from September 18-28. The exhibition will be opened by Mr. Arthur Ling, City Architect & Planning Officer, Coventry.

Newcastle to London and West of England service. The North Eastern Region of British Railways has introduced a service from Newcastle-upon-Tyne to London and the West of England. The 11.35 a.m. Newcastle-Colchester train will connect at York with the 2.24 p.m. York-Bristol train. It will also convey a through coach to Kings Cross, which

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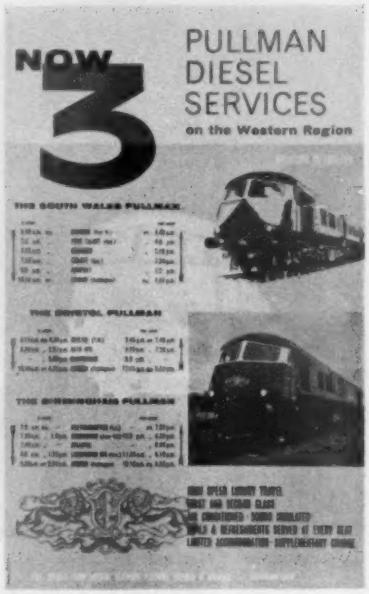

Two posters issued by British Railways, Western Region, publicising its Pullman trains

will be attached to the "Northumbrian" at York, due to arrive at Kings Cross at 5.48 p.m.

Electronic Computer Exhibition. The Electronic Computer Exhibition is to be held at Olympia, London, from October 3 to 12. This is the second exhibition by the industry and 53 exhibitors will take part.

Transfer of stations. On September 11 the London Transport Executive handed over to the London Midland Region of British Railways, Great Missenden, Wendover, and Stoke Mandeville Stations. To serve these stations the London Midland Region run, in addition to the previous service from Aylesbury to Marylebone, a shuttle service from Aylesbury to Amersham to connect with London Transport trains which now terminate at Amersham. Next spring the shuttle service and the mixed steam and diesel service will be replaced by a fast, all diesel service, from Aylesbury to Marylebone, calling at Stoke Mandeville, Wendover, Great Missenden, Amersham, Chalfont & Latimer, Chorley Wood, and Harrow.

Railway Stock Market

Although fears regarding the international situation dominated stock markets, there was again remarkably little selling, but uncertainty was reflected by the small volume of business, and the somewhat lower share values failed to tempt buyers. The good rise in the gold reserves shown by the latest figures, and the firmness of the £ provided further evidence that the Chancellor's "Little Budget" is working, and the indications are that if it had not been for the international crisis, stock markets would be rallying on a broad front. There is talk in the City that a reduction in bank rate may be possible next month.

Among foreign rails, Antofagasta ordinary stock eased from 21 to 20½xd, but the preference stock gained a point at 36. Costa Rica ordinary stock was 38½, Paraguay Central prior debentures 18, Chilean Northern first debentures 49 and Guayaquil & Quito assented bonds 58½. San Paulo Railway 3s. units remained at 2s. 3d., International of Central America common shares were $14½ and Brazil Railway bonds 4. Elsewhere, Mexican Central "A" bearer debentures kept at 58 and among French Railway sterling bonds, Midi 4 per cents remained at 80.

Canadian Pacifics strengthened from $44 to $44½, and the 4 per cent debentures from 53⅜ to 54, though the 4 per cent preference stock receded from 55½ to 54⅞. White Pass shares remained at $11. Business in Nyasaland Railways shares ranged from 10s. 9d. to 11s. 6d. New Brunswick Railway 4 per cent debentures marked 50 and Quebec Central 4 per cent first debentures 50⅜. West of India Portuguese 5 per cent capital stock changed hands at 121.

Among locomotive and engineering shares, Beyer Peacock 5s. shares eased from 6s. 9d. a week ago to 6s. 6d. and Charles Roberts 5s. shares from 5s. 10½d. to 5s. 7½d. Wagon Repairs 5s. shares were 22s. 9d. and Gloucester Wagon 10s. shares 9s. 4½d. Birmingham Wagon rallied strongly from 22s. to 27s. 3d., but North British Locomotive eased from 5s. 6d. to 5s. 3d. G. D. Peters were again quoted at 18s. 9d. though elsewhere, helped by further consideration of the results, Dowty Group 10s. shares have rallied from 32s. 7½d. to 34s. 10½d. Pressed Steel 5s. shares, however, eased from 20s. 9d. to 20s. 6d. and in other directions, Leyland Motors at 89s. 9d. compared with 90s. 6d. a week ago. Westinghouse Brake gained 1s. at 33s.

Vickers have been quite well maintained at 32s. 9d. at which there is a yield of 6 per cent on the basis of last year's 10 per cent dividend, and elsewhere, T. W. Ward have firmed from 72s. 6d. to 73s. while Guest Keen at 89s. 3d. were within 6d. of the level a week ago. Ruston & Hornsby at 23s. 3d. were virtually unchanged on balance, as were Babcock & Wilcox at 26s. 3d. and Clarke Chapman at 37s. 9d.

Among machine tools, Alfred Herbert showed a small gain at 67s. 3d. as did Craven Bros. 5s. shares at 8s. 6d., while in other directions, British Oxygen 5s. shares rose from 18s. 3d. a week ago to 19s. In electricals, A.E.I. have rallied from 37s. to 38s. 3d., English Electric eased a few pence to 30s. 3d., and G.E.C. were also slightly down on balance at 30s. 6d.

B.I.C.C. moved ahead from 57s. 9d. to 59s. 1¼d. and Mather & Platt were better at 38s. Crompton Parkinson 5s. shares strengthened from 12s. 1¼d. to 12s. 3d. Tube Investments at 62s. 6d. have not held best prices, but compared with 61s. 10½d. a week ago, Pollard Bearing 4s. shares strengthened to 36s. 6d. "ex rights" to the new shares which were at a premium of 14s. 9d. Ransome & Marles 5s. shares at 16s. 6d. compared with 15s. 10½d. a week ago.

Forthcoming Meetings

Sept. 16 (*Sat.*). The Permanent Way Institution, East Anglia Section, visit to Permali Limited, Gloucester.

Sept. 16 (*Sat.*). The South Bedfordshire Locomotive Club, special train over the freight-only, Welwyn Garden City to Hertford branch.

Sept. 16 (*Sat*). Railway Students Association, annual outing from Reading South Station.

Sept. 18 (*Mon.*). The Historical Model Railway Society. Talk, The Construction of Freight Rolling Stock, at Keen House, Calshot Street, N.1.

Sept. 23 (*Sat.*). The Railway Correspondence and Travel Society. The four-counties rail tour.

Sept. 25 (*Mon.*). Institution of Railway Signal Engineers, Bristol. Signalling developments on the Railways of Southern Africa.

Sept. 26 (*Tue.*). The Institution of Locomotive Engineers. Ordinary general meeting and Presidential address. 5.30 p.m. 1, Birdcage Walk, S.W.1.

Sept. 27 (*Wed.*). Annual dinner of the East Indian Railway Officers. Connaught Rooms.

Sept. 28 (*Thu.*). Permanent Way Institution, Nottingham & Derby section. Demonstration of track tools and equipment. Derby.

Sept. 30 (*Sat.*) Talyllyn Railway Preservation Society. Talyllyn Special, 1961. Paddington, 8 a.m.

Sept. 30 (*Sat.*). The Permanent Way Institution, visit to Fisons Pest Control Limited, Saffron Walden.

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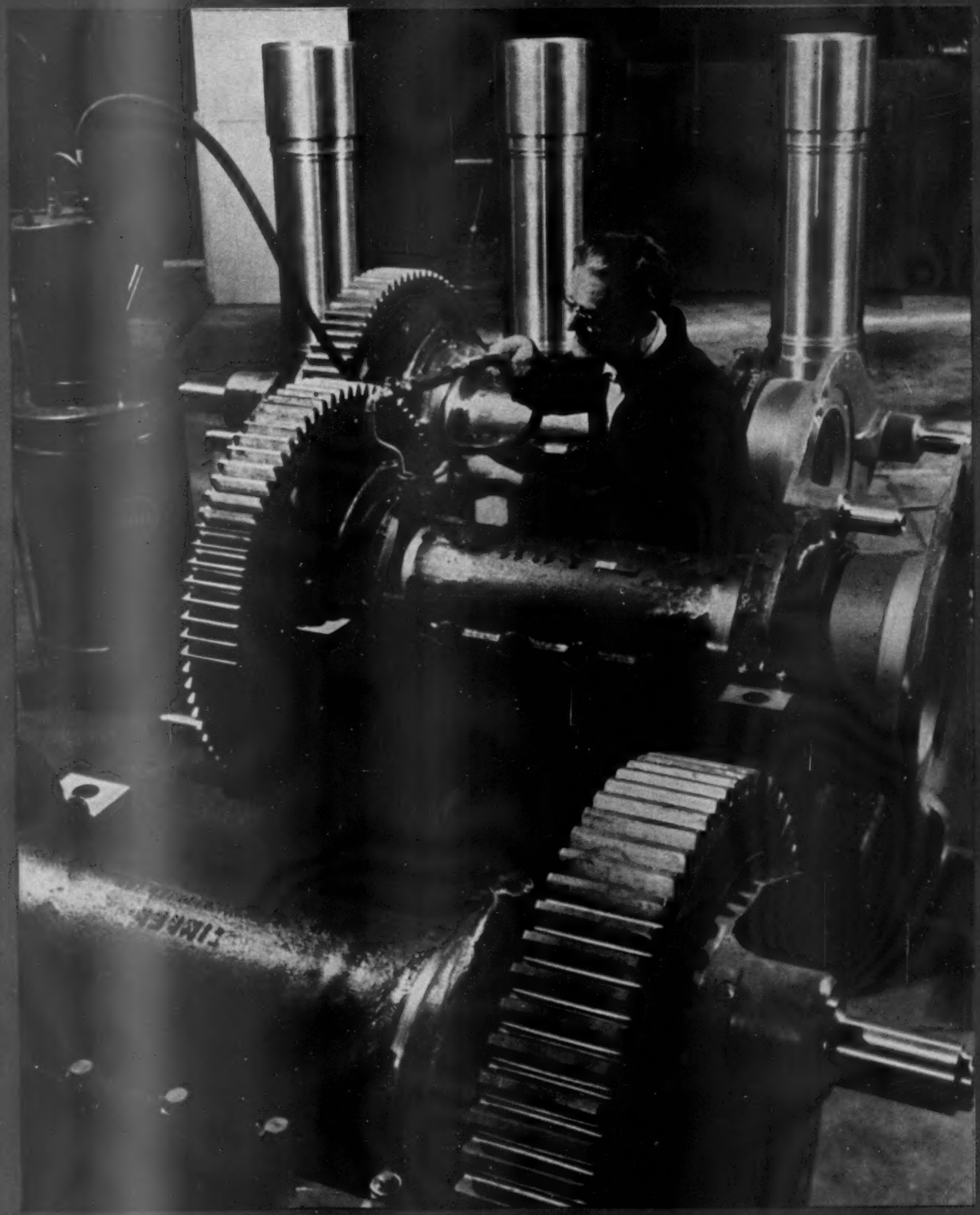

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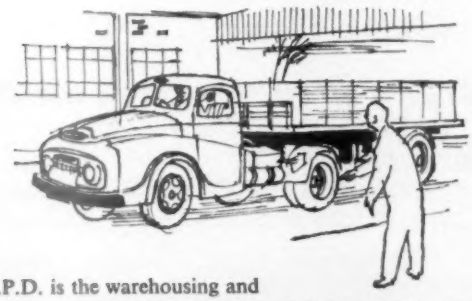

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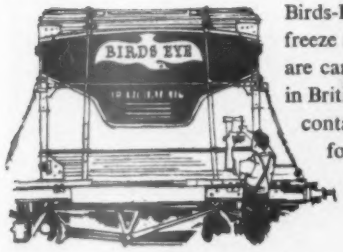

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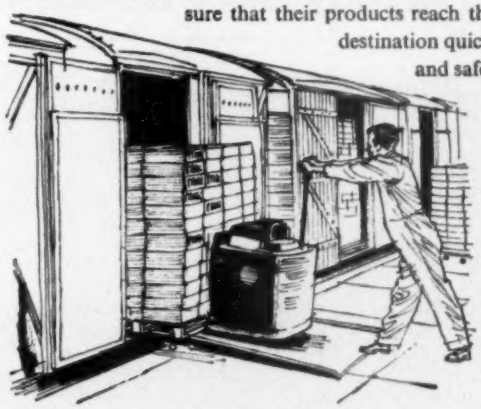

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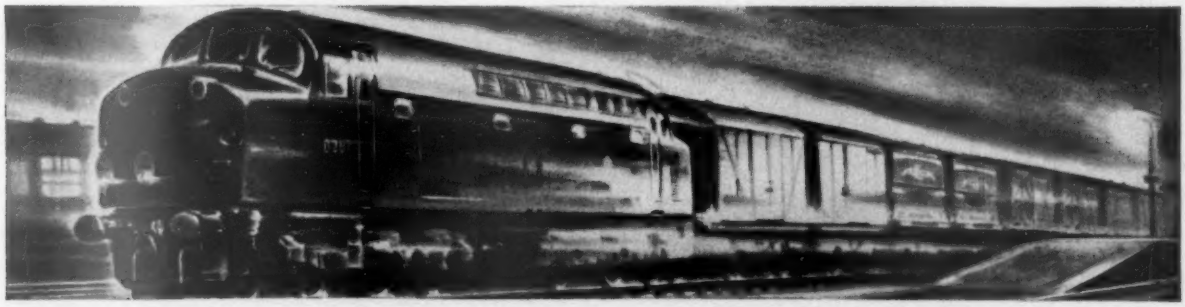

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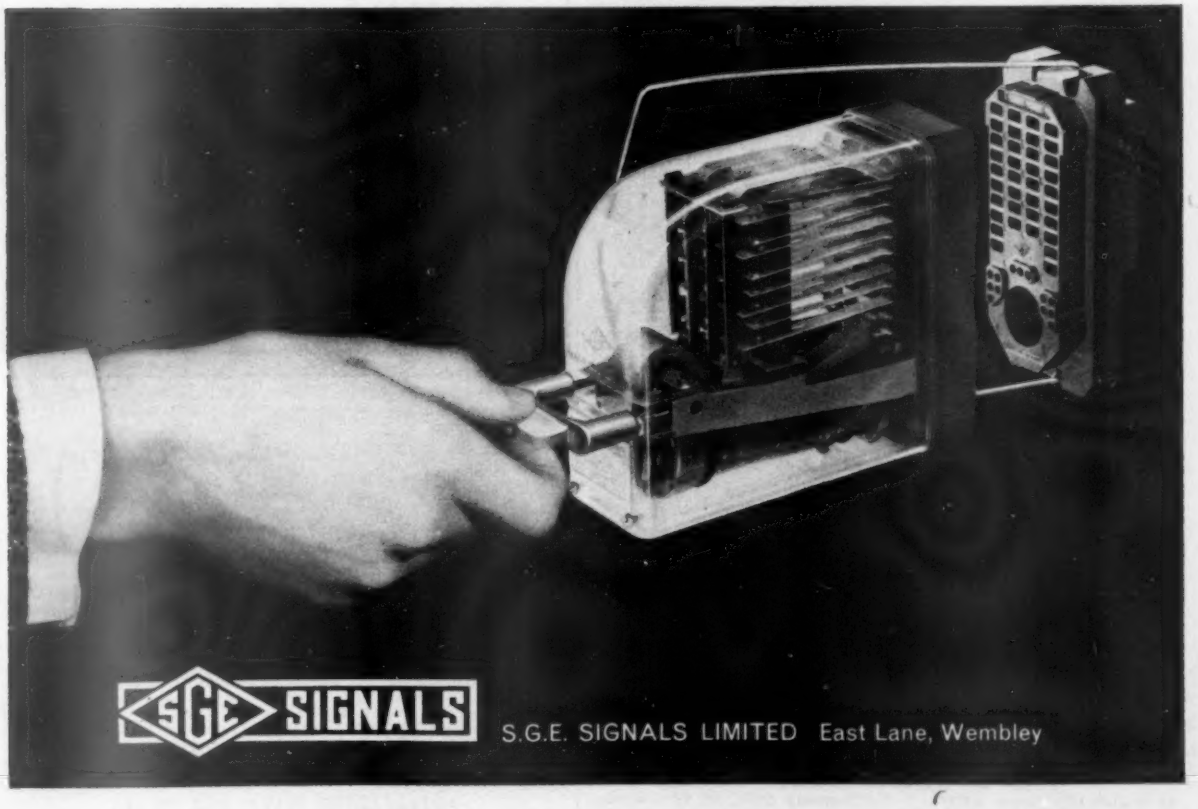

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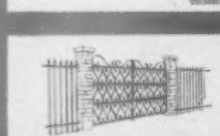

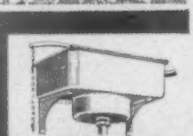

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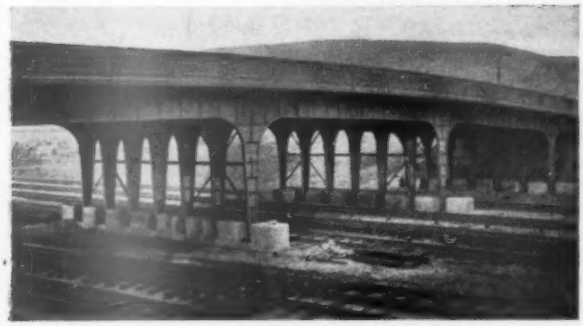

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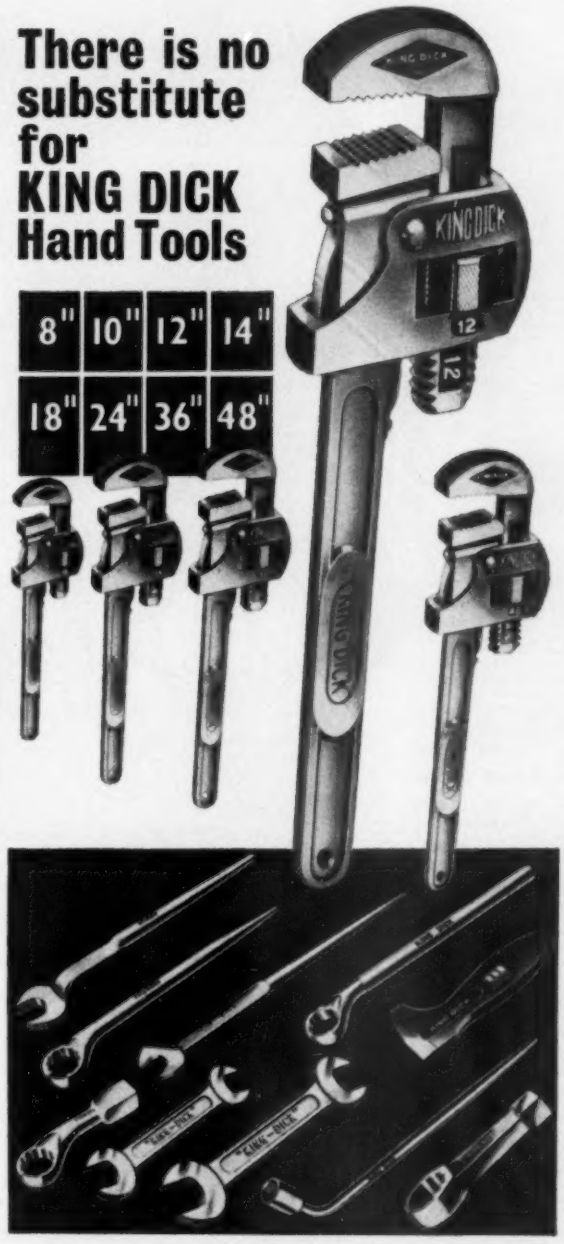

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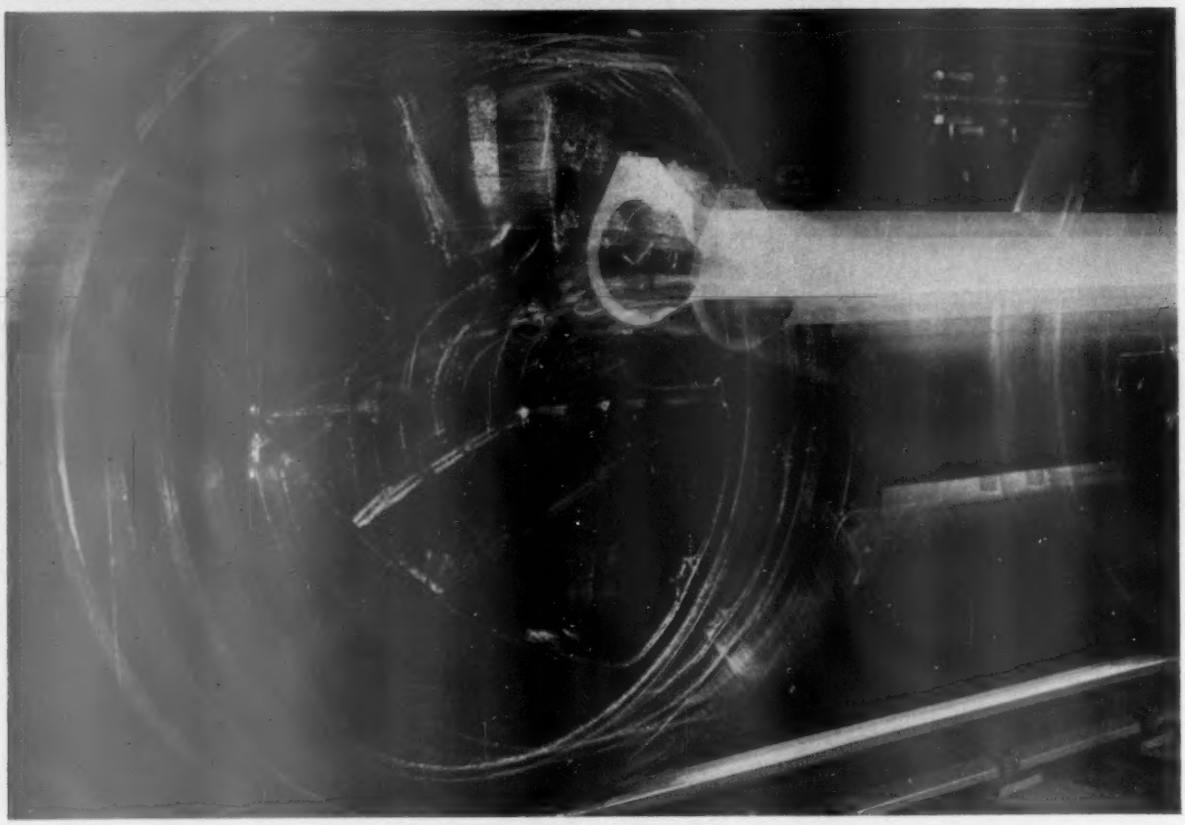

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